PIT AND QUARRY

MARCH 1961

In this Issue . . .

National Crushed Stone Association,
Agricultural Limestone Institute,
And National Concrete Masonry Asso.
Convention Reports • Skanska Cement
Company's New Plant • How Lehigh
Portland's Safety Program Works

Bulldozer Reclaiming Sand and Gravel from Stockpile to Hopper at Henry J. Kaiser Company's Redoni Plant

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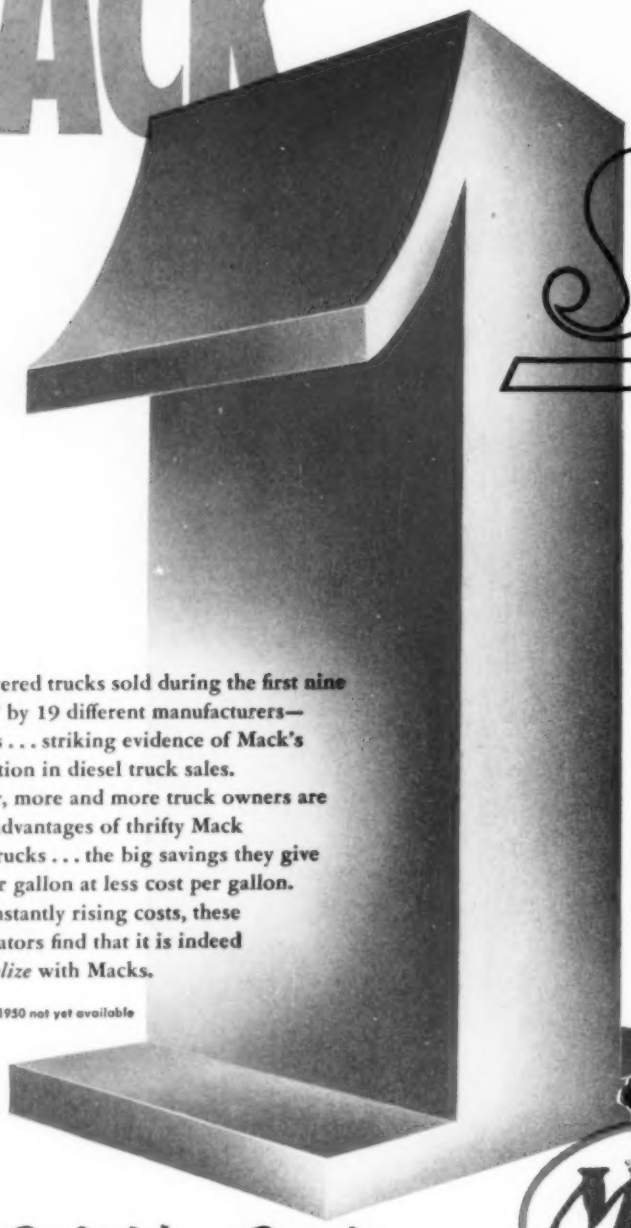
MACK



1st

IN DIESEL TRUCK SALES

Of all diesel-powered trucks sold during the first nine months of 1950* by 19 different manufacturers—41% were Macks . . . striking evidence of Mack's top-ranking position in diesel truck sales.

The country over, more and more truck owners are discovering the advantages of thrifty Mack diesel-powered trucks . . . the big savings they give in more miles per gallon at less cost per gallon.

In the face of constantly rising costs, these progressive operators find that it is indeed *profit-wise to dieselize* with Macks.

*Final figures for 1950 not yet available

Be Profit-Wise... Dieselize with Mack TRUCKS

outlast them all

Mack Trucks, Empire State Building, New York 1, N. Y. Factories at Allentown, Pa.; Plainfield, N. J.; Long Island City, N. Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.

at hard labor on the ROCK PILE

At Clark Hill Dam—$60,000,000 triple-purpose dam now under construction on the Savannah River—all aggregate rides from quarry to dam site on a 16-belt conveyor system. Here, as in outstanding construction projects the country over, conveyor belts specified by the G. T. M. —Goodyear Technical Man—are giving long, low-cost service.

G.T.M.-SPECIFIED GOODYEAR STYLE B CONVEYOR runs from primary stock pile to crusher and screening plant.

FROM CRUSHER TO STOCK PILES, sized aggregate is stock-piled by shorter conveyors belted according to the G.T.M.'s specifications.

UPGRADE from stock piles to mix plant, all aggregate rides this Goodyear Style B conveyor.

GOODYEAR INDUSTRIAL RUBBER PRODUCTS
GY-Specified
STYLE B CONVEYOR BELT
FOR AGGREGATE HANDLING SYSTEM
A Tough cover resists cutting and abrasion
B Multi-plies of mildew-inhibited duck, friction coated
C Breaker strip available when specified
D Cover of tough, abrasion-resisting rubber
Available in 28 to 48 oz. duck; 3 to 10 plies; widths from 14" to 42" in stock-sizes, other sizes to order; full range of cover gauges.

FOR HOSE, FLAT BELTS, V-BELTS, MOLDED GOODS, PACKING, TANK LINING, RUBBER-COVERED ROLLS built to the world's highest standard of quality, phone your nearest Goodyear Industrial Rubber Products Distributor.

We think you'll like
"THE GREATEST STORY EVER TOLD"
Every Sunday—ABC Network

GOODYEAR

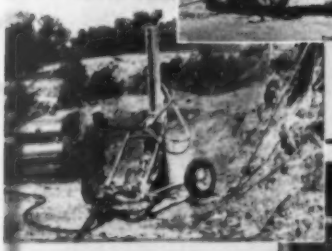
THE GREATEST NAME IN RUBBER

PIT AND QUARRY, March, 1951, Vol. 43, No. 9. Published monthly by the Complete Service Publishing Company, 538 South Clark Street, Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South Ameria; elsewhere $3 additional for each year. Single copy 25 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

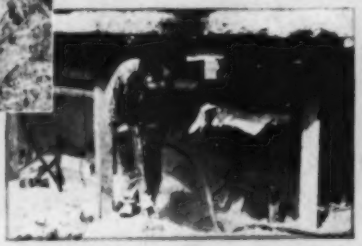
Progress Reports Reveal Faster Progress

when *Gardner-Denver's* in your picture!

Air pressure's always up —when Gardner-Denver Portables feed your lines. Cylinders are water-cooled all the way down for all weather efficiency—compressors are two-stage for any altitude performance.

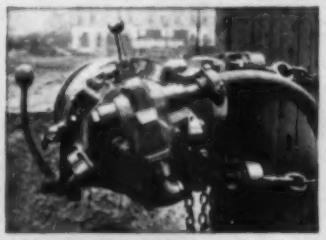


Holes are spotted quickly—drilled fast and clean with Gardner-Denver Wagon Drills.



Demolition proceeds at a steady pace—Gardner-Denver Breakers are easy on the operator—tough on concrete.

A clean hole drills faster — and Gardner-Denver Sinkers are noted for hole cleaning ability, powerful rotation.



For speedy pull and haul—powerful Gardner-Denver Air Hoists are easy to control.

Saves shop time for all pneumatic tools—L012 Automatic Oiler shuts off air when it runs out of oil.

Keeps water out of your way—Top-Suction VP4 Sump Pump won't borrow in the mud—keeps grit out of the pump shaft seal.

Write for further information.

Packs backfill swiftly and firmly—Gardner-Denver Tampers are easy to hold—seldom require maintenance—non-freezing.

Clay or hardpan doesn't waste time—when tackled with Gardner-Denver Clay Spaders and Trench Diggers.

SINCE 1859

GARDNER-DENVER

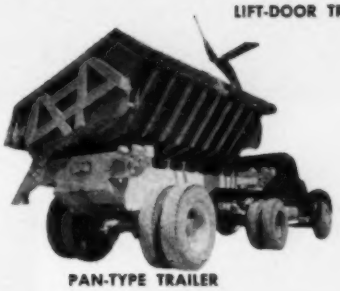
THE QUALITY LEADER IN PUMPS, COMPRESSORS AND ROCK DRILLS

Gardner-Denver Company, Quincy, Illinois

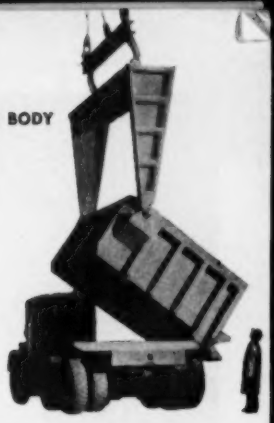
In Canada:

Gardner-Denver Company (Canada), Ltd., Toronto, Ontario

DROP-DOOR CAR



PAN-TYPE TRAILER



LIFT-DOOR TRUCK BODY

DROP-DOOR TRUCK BODY

PAN-TYPE CAR (PHOENIX)

DOUBLE-BOTTOM PAN-TYPE TRAILER

LIFT-DOOR TRAILER

PAN-TYPE TRUCK BODY

DOUBLE-BOTTOM DROP-DOOR TRAILER

What About Side-Dumps?

Experienced users say, "When side-dumps apply there is no reason to consider any other type of hauling equipment!"

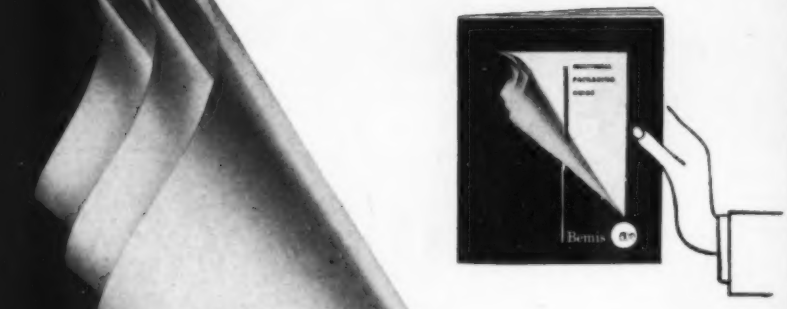
Do the spectacular advantages of new, modern side-dumps apply to your hauling requirements? Is there an undiscovered opportunity to reduce your handling, increase your production, save hauling time and cut your hauling costs by switching to the *roll up, dump, and roll on* side-dump system?

Why not get the facts straight from headquarters — from EASTON side-dump engineers? With the right EASTON side-dump trailer or truck body teamed up with the truck chassis of your choice you've hit the winning combination. If it's cars, call EASTON, too! For complete information please direct your inquiry to the main sales office at:

EASTON CAR & CONSTRUCTION CO., EASTON, PA.

EASTON
Side-Dumps

CARS • TRUCK BODIES • TRAILERS



GET YOUR COPY OF

. . . it shows how to do a more efficient packaging and handling job and save materials and labor. Deals with Storage of Empty Bags, Filling and Closing, Handling of Filled Bags, Palletizing and other important topics. Ask your Bemis Man or write to the nearest Bemis office. No cost to you, of course.

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IF IT'S A REAL ROCK SHOVEL

it means BIG OUTPUT IN ANY DIGGING!

Northwest Rock Shovels have met the *test of Rock.* Their ability in tough digging is proved in literally hundreds of installations. Smooth operations in close quarters, digging force that makes handling the big ones easier, steering that negotiates rough pit floors and benches, ease of control that can be depended on regardless of temperature or weather, assure output day in and day out.

If you are planning on new equipment you should know about Northwest advantages—Uniform Pressure Swing Clutches, the Cushion Clutch, the Northwest Dual Independent Crowd, Differential Steering, the "Feather-Touch" Clutch Control and other Northwest features—and remember, if you have a real Rock Shovel you are sure of *output* in any digging. We'll be glad to tell you more about it now—so you can plan ahead. Make your next shovel a Proved Rock Shovel.

NORTHWEST ENGINEERING COMPANY
1515 Field Building, 135 South LaSalle Street, Chicago 3, Illinois

only the best for the heart of the job

MAKE YOUR NEXT MACHINE A NORTHWEST CRAWLER CRANE

PROFIT

NORTHWEST

Convertible for any Mining Material Handling or Excavation Problem

ANNOUNCING...

The NEW SHELL ROTELLA OIL

(Extra Heavy Duty Type)

"... exceeds every accepted performance standard for oils in its class"

OUTSTANDING PISTON CLEANLINESS

The new Shell Rotella Oil stands out in the very top bracket with respect to Piston Cleanliness, providing convincing proof of its ability to keep contaminants out of the critical zone in which wear is concentrated.

MUCH LOWER RING DEPOSITS

Ring-plugging tests are really tough, yet new Shell Rotella Oil came through stiff competition with a remarkably low ring deposit rating . . . far below the established passing mark!

GREATER ENGINE LIFE

Recognized laboratory engine tests are important in establishing qualifications of lubricants to meet strict requirements. More important to operators, however, is the *tremendous increase in engine life* and the consequent reduction in maintenance expense and time out-of-service that the new Shell Rotella Oil is contributing to fleet operation under today's conditions.

NEW SHELL ROTELLA OIL . . .

Stepped up cleaning action...

Even greater anti-wear protection

. . . anticipating the needs of today's high performance fleet engines

TODAY'S hauling conditions are imposing greatly increased demands upon fleet engines . . . and the lubricants selected to keep them running. At the same time these high-performance engines are expected to turn in ever-increasing mileage records between overhauls.

For these reasons, and because even greater performance will probably be expected as time goes on, the detergent-dispersant and anti-wear qualities of Shell Rotella Oil have been markedly increased.

Operators using Shell Rotella Oil in the past will find an even greater latitude in maintenance procedures.

4-WAY LIFE EXTENSION FOR BUSY ENGINES

1. **Remarkable detergent-dispersant action**

The ability to suspend contaminants has been deliberately stepped up in the new oil. Field tests on vehicles, in widely varying kinds of service, prove conclusively that this greater detergent-dispersant action extends mileage between overhauls.

2. **Drastic sludge reduction**

Operators who have been having sludge troubles . . . with clogged pump screens, burned out bearings, or clogged oil ways . . . are urged to find out for themselves how remarkably clean those engines will remain while using this new anti-sludge Shell Rotella Oil.

3. **Positive Anti-acid action**

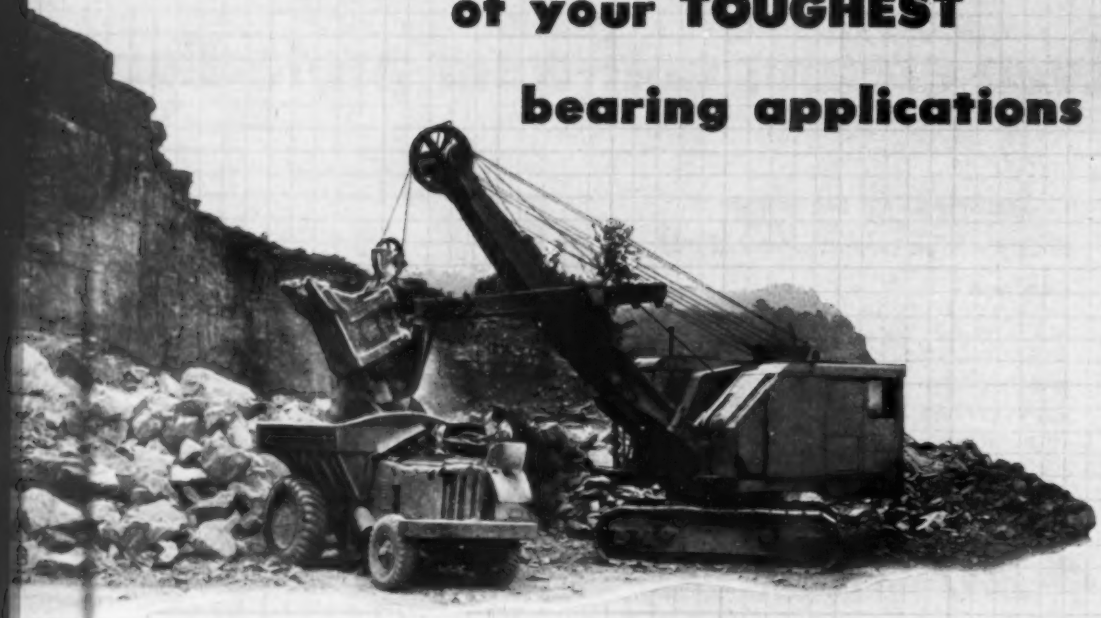
New Shell Rotella Oil directly counteracts the acid action of fuel combustion products in the vital top-cylinder zone . . . with correspondingly great reduction in wear. This protection is extremely important in the operation of intermittently loaded engines.

4. **Extends time between engine overhauls**

New or reconditioned engines . . . operating on fuels of widely-varying quality . . . in all kinds of fleet service . . . have demonstrated an important extension of in-service time. *This gain results from improvement in several basic respects: freedom from sludge and ring-clogging, increased valve life and greatly reduced wear.*

for all heavy duty fleet engines

You can better the service record of your TOUGHEST bearing applications



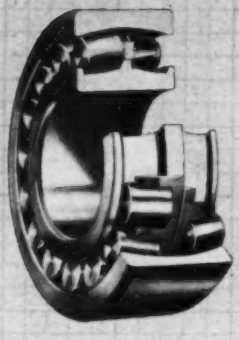
The ability of Torrington Bearings to better any previous performance and service record can be demonstrated . . . on your own equipment

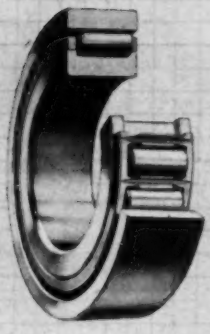
The Koehring power shovel above, and the Barber-Greene crusher opposite, are only two of many "proving grounds" where Torrington Bearings are giving daily proof of their ability to deliver top performance per dollar invested.

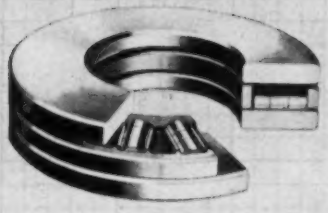
You can prove this for yourself by a trial of Torrington Bearings in your own equipment, under conditions you can watch.

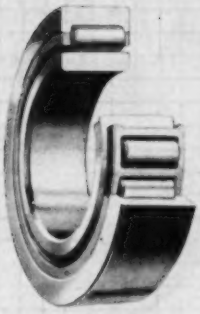
Select your toughest anti-friction bearing application. Call in a Torrington service engineer for recommendations—and then watch efficiency go up and maintenance go down.

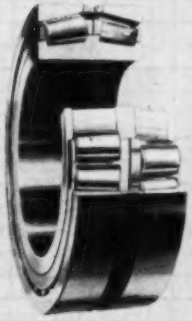
TORRINGTON











Here is why Torrington Bearings will improve the performance of your equipment

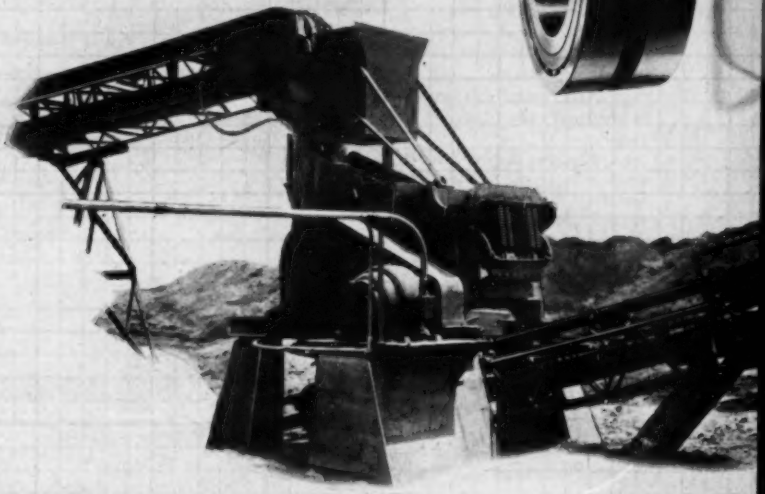
We stint on no detail to make Torrington Bearings the best for your money. They are designed and manufactured with the precision and metallurgical properties that mean longer service life in the most exacting application. And they are backed by the service of a firm that has worked with *all* major types of anti-friction bearings, and knows the problems of design and operation of construction machinery.

That is why we can recommend exactly the right bearing for your toughest application. The proof is in the demonstration—in *your* equipment under field operating conditions. Arrange a trial now. A phone call or letter will get it under way.

THE TORRINGTON COMPANY

South Bend 21, Ind. • Torrington, Conn.

District Offices and Distributors in Principal Cities of United States and Canada



SPHERICAL ROLLER
TAPERED ROLLER
STRAIGHT ROLLER
NEEDLE
BALL
NEEDLE ROLLERS

BEARINGS

Bagdad Copper Corporation's Arizona plant chose Gates Vulco Rope Drives for these big Ball Mills because of the proven ability of Gates Vulco-Ropes to handle this rugged service.

This Simple Test Tells WHY the Concave Sides of Gates Vulco Ropes Mean *Longer Belt Life!*

Prove this *yourself*—in two minutes' time.

Take any V-belt that has *straight* sides. *Bend* that V-belt while you grip its sides between your fingers and your thumb. You will *feel* the sides of the belt *bulge out*—as shown in figure 1-A, below.

Clearly, that outbulge forces the sides of the belt to press *unevenly* against the V-pulley—and this concentrates the *wear* where the bulge is greatest.

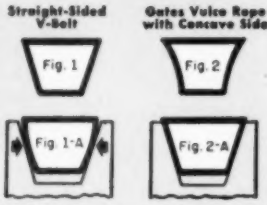
Now, make the same test with the belt that is built with the Concave Sides—the Gates Vulco Rope.

Figures 2 and 2-A show clearly what happens when you bend a Vulco Rope. Instead of *bulging*, the precisely engineered Concave Sides merely *fill out* and become perfectly straight. There is no side-bulge. This belt, when bent, precisely fits its sheave groove.

Because there is *no bulging*, the sides of the Gates Vulco Rope always grip the *full* face of the V-pulley *evenly* and therefore wear *uniformly*—resulting in *longer belt life* and *lower belt costs for you.*

Only V-belts made by Gates are built with concave sides. Whenever you buy V-belts, be sure that you get the V-belt with the Concave Sides—The Gates Vulco Rope!

What Happens When a V-Belt Bends



How Straight-Sided V-Belt Bulges in Sheave-Groove. Sides Press Unevenly Against V-Pulley Causing Extra Wear At Point Shown by Arrows.

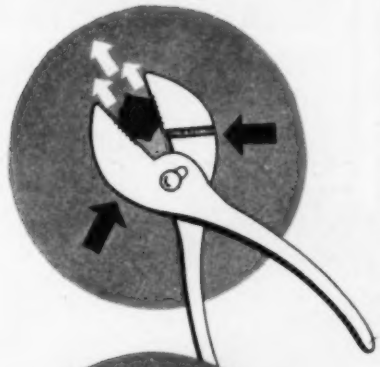
The Concave Sides Fill Out to a Precise Fit in the Sheave-Groove. No Side Bulge! Sides Press Evenly Against the V-Pulley—Uniform Wear—Longer Life!

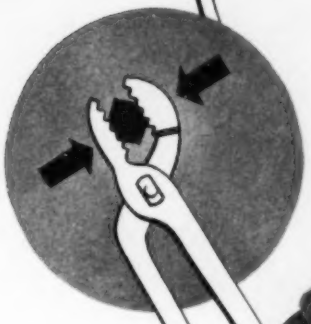
CS-511

THE GATES RUBBER COMPANY
DENVER, U. S. A.
The World's Largest Makers of V-Belts

Gates VULCO ROPE DRIVES
Engineering Offices and Jobber Stocks IN ALL INDUSTRIAL CENTERS of the U.S. and 71 Foreign Countries

a Traylor TY Reduction Crusher cuts costs by more efficient use of power





THIS SIMPLE TEST SHOWS HOW A TRAYLOR TY CUTS DOWN POWER LOSS

Two commonly used types of pliers can be used to illustrate the greater efficiency of Traylor crushing surfaces over conventional types. Place a nut or similar object in the straight jaws of an ordinary pair of pliers. Notice how the object has a tendency to slip out of the jaws when force is applied . . . how much effort is required to finally break it. Now place a similar object in a pair of pliers designed so that their jaws move *parallel* to each other. Notice the positive grip . . . how much less effort is required to crush the object. That's because power was applied directly counter to an opposing surface.

Traylor Curved Concaves and Bell Heads use this same principle to reduce power waste. These curved crushing surfaces have been so designed that the eccentric motion of the Bell Head exerts power directly counter to the curved surfaces of the concaves. This stops lifting and churning of material . . . cuts power loss . . . reduces power costs per ton.

Mail coupon for complete details and capacities

Traylor TY Reduction Crushers are more *economical to operate* . . . more *dependable in heavy-duty continuous service*. In addition, they produce a better, *more uniform* product. For proof of this outstanding performance, fill out and mail coupon for free bulletin on a Traylor TY Reduction Crusher.

Traylor

Rotary Kilns, Coolers and Dryers · Grinding Mills
Jaw, Reduction and Gyratory Crushers · Crushing Rolls

TRAYLOR ENGINEERING & MANUFACTURING CO.
328 MILL ST., ALLENTOWN, PA.

I want to know more about a Traylor TY'S efficient use of power.

Name_____

Company_____

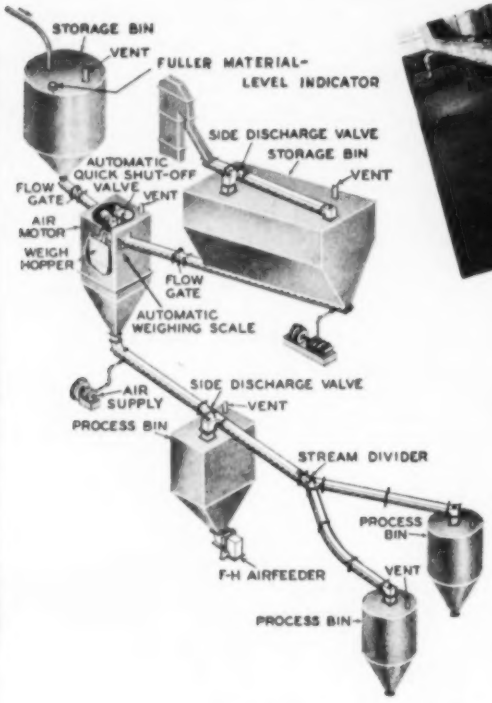
Address_____

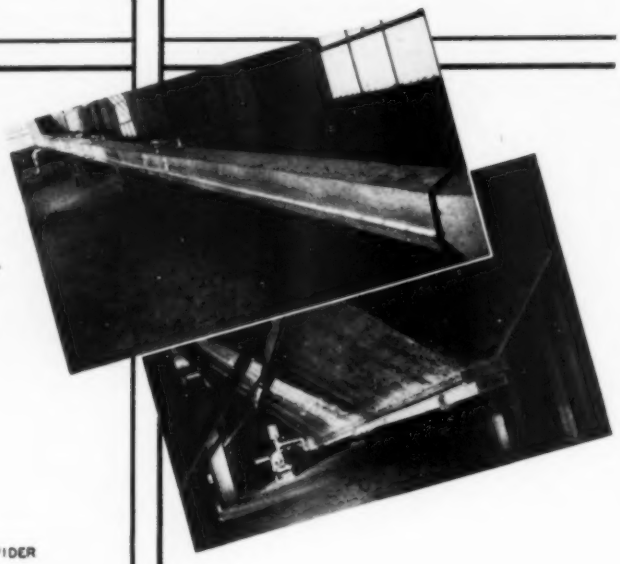
SALES OFFICES: New York, N.Y.; Chicago, Ill., Los Angeles, Calif.
Canadian Mfrs: Canadian Vickers, Ltd. Montreal, P.Q.

A "TRAYLOR" LEADS TO GREATER PROFITS

only the material moves

in the F-H Airslide®





It's simple—it's sure—it's sanitary—it's safe, (no hazardous moving parts)—it saves—this improved method of ***flowing*** fine, dry materials. The F-H Airslide Conveyor is being more and more widely considered, and used, in various industries. It eliminates dust nuisances, saves man-hours, keeps production flowing smoothly at minimum operating cost.

The F-H Airslide consumes little power—only that required for a small volume of air at low pressure. Valuable floor space is saved, and the system can be installed with a flexibility impossible to obtain with a conventional conveyor.

Chemical processing plants of every size and type will find the Airslide Conveyor the solution to the problem of transporting fine, dry materials, with maximum efficiency and economy.

A Fuller engineer can show you how the system can be put to work for you—how you can increase efficiency while you reduce operating costs. Why not contact us today?

Fuller

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS—COMPRESSORS AND VACUUM PUMPS—FEEDERS, AND ASSOCIATED EQUIPMENT

FULLER COMPANY, Catasauqua, Pa.
120 So. LaSalle St., Chicago 3
420 Chancery Bldg., San Francisco 4

FH-20

triple play for profit

with P&H ELECTRIC SHOVELS

All three of these P&H Electric Shovels are at work for J. Robert Bazely at Pottsville, Pa. There are three sizes at work here — 4, 5 and 6 cu. yds., all delivering steadily at rock bottom costs.

P&H leads the field in Electric Shovel Developments.

It's the same pattern wherever these new P&H Electric Shovels go to work: The first machine sells the second — the third — and more.

The reasons are plain and simple — *better performance — bigger production — lower tonnage cost.*

Reasons behind the reasons are such advantages as P&H Magnetorque* which powers hoisting motions electro-magnetically — smoother, faster, more dependably . . . rugged all-welded construction with more strength to withstand shock loads . . . independent propel for quicker move-ups . . . stepless control which eliminates all contactor troubles . . . filtered air cab ventilation for less electrical down time.

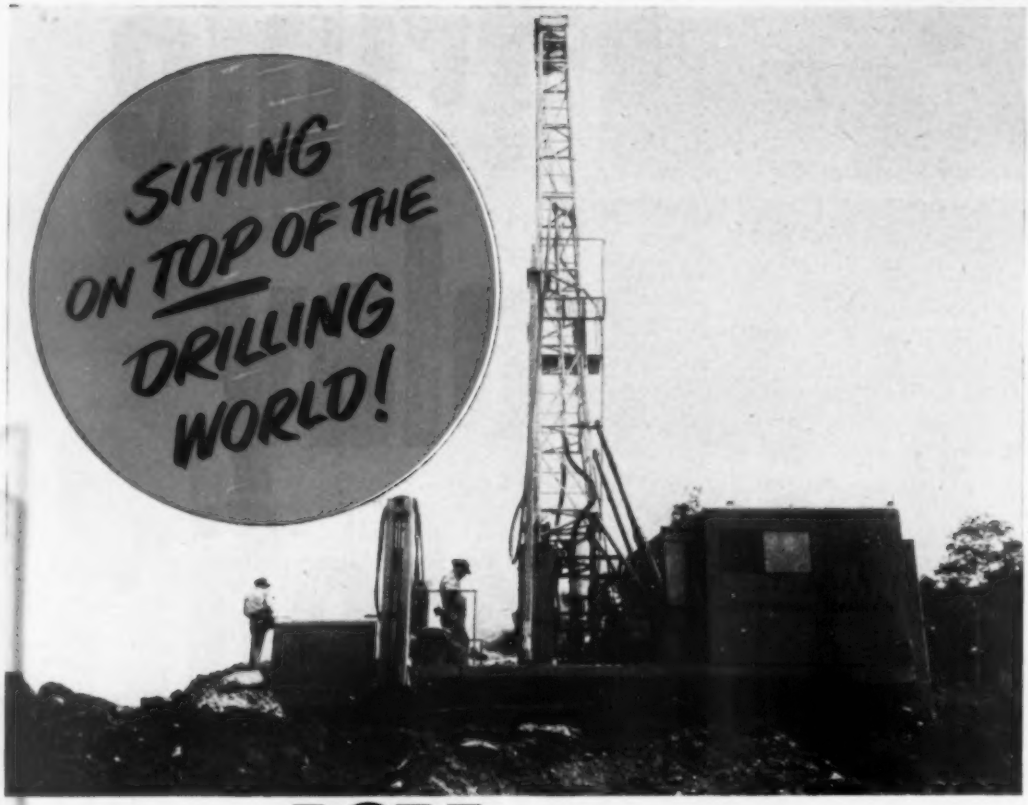
The cold, hard facts that count are: *performance, production, low tonnage cost.* Figure your costs with P&H Electric Shovels and you'll find a convincing difference. It explains why every third P&H Electric Shovel sold is a repeat order.

*T. M. of Harnischfeger Corporation for electro-magnetic type clutch.

P&H ELECTRIC SHOVELS
4451 West National Avenue
Milwaukee 14, Wisconsin
HARNISCHFEGER CORPORATION

Every third P&H Electric Shovel sold is a repeat order

EXCAVATORS • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • CRAWLER AND TRUCK CRANES • DIESEL ENGINES • PRE-ASSEMBLED HOMES



The JOY CHAMPION BLAST HOLE DRILL

CUTS YOUR DRILLING COSTS TO A FRACTION!

There's nothing in the field to touch the Joy Champion! Users will tell you—it actually out-drills three or more churn drills; gives you longer bit life, too. Drills *dry*—no water lines to lay, no winter freezing problems. You finish every hole started—straight, smooth-walled holes that load easier and shoot more efficiently. Two models: Heavyweight and Middleweight Champions—choice of diesel or electric drive. ● *Get a performance estimate—send us samples of your rock.*

W&D R3471

Consult a Joy Engineer

100 YEARS OF ENGINEERING LEADERSHIP

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

ROCK LOADING—FASTER—CHEAPER

Tough loading jobs are best handled by the Eimco 104 RockerShovel. In the pit, rock quarry, tunnel or mine this machine is unexcelled for fast, efficient loading and at lower cost per ton loaded.

The 104 is a heavy-duty, crawler mounted machine using the famous Eimco rocker-arm principle, picking up its load in front and discharging overhead to the rear. More than 6000 Eimco machines are operating every day employing this principle.

The 104 is equipped with a 1¼ or 1½ yard bucket for rock, with larger buckets available for lighter materials. The 104 can be supplied for Electric or Diesel operation.

Write for information and performance data on the 104 with regard to your rock loading job.

EIMCO

THE EIMCO CORPORATION

The World's Largest Manufacturers of Underground Rock Loading Machines

EXECUTIVE OFFICES AND FACTORIES — SALT LAKE CITY 10, UTAH, U. S. A.

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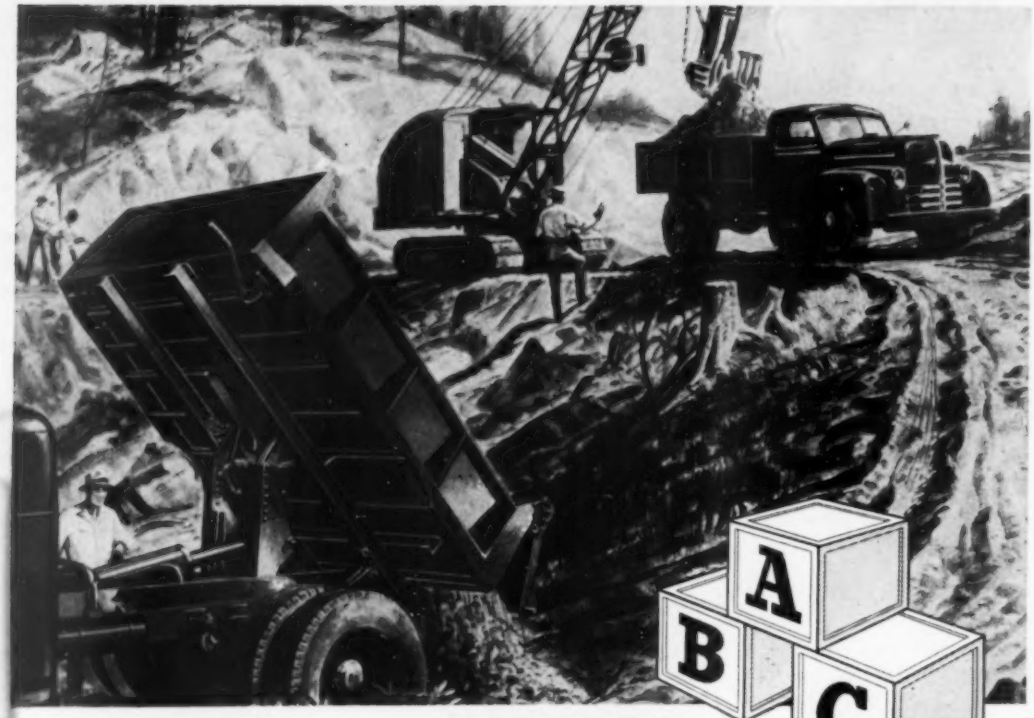
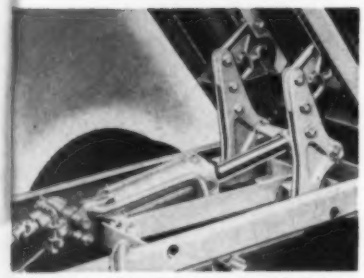
IN ENGLAND, EIMCO (GREAT BRITAIN) LTD., LEEDS 12, ENGLAND
AGENTS IN ALL PRINCIPAL CITIES THROUGHOUT THE WORLD

You can't beat an Eimco!



LOOK . . . HERE'S



Scientifically positioned fulcrums and transfer linkages automatically "shift" the load at different points, eliminating lift-shock and smoothing out lifting action throughout the dumping cycle.

At work!

It isn't often that you can actually see A B C at work . . . doing a job such as Galion's great A B C combination is "coming through" on here.

And Galion is the only producer of hydraulic hoists and allsteel dump bodies with this great A B C combination . . . where an exclusive fulcrumatic hoist ACTION combines with a perfect lifting and operating BALANCE and proved quality CONSTRUCTION to do a better job for a longer time and prolong chassis life as well.

So Get the Best . . . Get Galion when you need new dump truck equipment. It will pay Big!

MAKES A WHALE OF A DIFFERENCE THE "WEIGH" IT LIFTS

Sales and Service from Coast to Coast

GALION

ALLSTEEL BODY COMPANY

GALION, OHIO

A exclusive hoist *Action*

B perfect operating *Balance*

C proved quality *Construction*

EARTH MOVING and construction equipment like this powerful bulldozer takes severe punishment in even normal operation. Protect it from excessive wear . . . improve its performance with the finest lubricants available.

Cities Service has a remarkable new line of all-weather, all-purpose lubricants. These top quality petroleum products slash maintenance costs . . . reduce equipment down-time . . . step up the efficiency and power of all units under all kinds of heavy duty operating conditions. Learn today how you can gain big increases in the productive capacity of your units. Mail coupon below.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

VALUABLE FREE BOOKLET

Our new manual "Earth Moving and Construction Machinery Lubrication" is a handy, fact-filled guide to perfect lubrication. Write today.

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"Cat" Bulldozer

AMERICA'S ALL-PURPOSE TOOL

"You can always depend on 'Cat' products, and for production they can't be beat!" That's what Walter Lindberg of A. Lindberg & Sons thinks of this "Caterpillar" Bulldozer, stripping in a gravel pit near Negaunee, Michigan. And Mr. Lindberg has something else to say that makes a lot of sense: "We have some very fine dealer service up here, and that is very important to us."

These machines give you matched design—tractor and 'dozer built to work together. This rugged unit is a bear at meeting work schedules. Sturdy construction and quality materials enable it to keep punching full time without down-time, and the special steel cutting edge of the blade hammers through the toughest going. Most important of all, the precision methods used in "Caterpillar" factories build extra years of life into these tools.

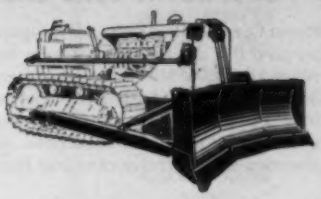
For help with your equipment problems, see your "Caterpillar" dealer *now*. Today's expanding military program has high priority. But it is recognized that our national preparedness depends upon stepped-up civilian production too. We must have more lumber, coal, food and essential ores. We must continue to build and improve America's vital network of highways. So your "Caterpillar" dealer is especially interested in meeting your needs—through equipment replacement and by exercising his working partnership with you to keep the machinery you have *on the job*.

CATERPILLAR, PEORIA, ILLINOIS

This "Caterpillar" D8 Tractor with No. 8S 'Dozer strips and 'dozes for this entire quarry pit, which has a daily output of 400 to 500 tons of aggregates per 8-hr. day. Averaging 3-4 yd. loads, this rugged tool makes 60 trips per hr. on haul distances up to 200 ft. in the pit near Negaunee, Michigan. Owner Walter Lindberg says: "We have used 'Cat' products for many years and find the machines tops in the earth-moving and engine fields!". . . Price of a standard "Caterpillar" D8 Tractor is $15,000; No. 8S Bulldozer, $1,775; No. 2S Cable Control, $1,630, f.o.b. Peoria. Prices subject to change without notice.

"CATERPILLAR" BULLDOZER EXTRA FEATURES

1. Tractor and 'dozer *broken to harness*, and a size for every need.
2. Moldboard curvature for active, *rolling*, higher production loads.
3. Box section side arms — extra thick at points of greatest stress.
4. Choice of straight or angling type of blade, simple to maneuver and easy to adjust or detach.
5. Your choice of hydraulic or manual cable controls.
6. The power of the "Caterpillar" Diesel Engine is geared to blade *capacity*.



NEW ADDITION TO 'DOZER LINE

Here's a specialist that can step up production and cut costs. It's the brand new No. 8U 'Dozer for use with the "Caterpillar" D8 Tractor, with cable control. Working best in loose or light material, the end portions of this 'dozer's blade extend forward to give it a U shape. This makes it possible to drift large loads without spillage, making it possible to 'doze longer distances for bigger production. The No. 8U is built to the same high standards of strength and long life as the other "Caterpillar" Bulldozers. The versatility of this new tool gives it excellent performance on all kinds of 'dozing jobs, from stockpiling to pioneering.

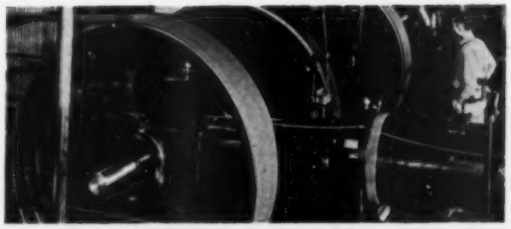
CATERPILLAR

DIESEL ENGINES · TRACTORS · MOTOR GRADERS · EARTHMOVING EQUIPMENT

A Complete Line of Transmission Belts

U. S. ROYAL TRANSMISSION BELT

Square-cut edge construction, no folds. Made with specially woven hard duck giving unusual strength with low stretch. Friction between plies is the highest quality obtainable, scientifically compounded for long life, extra flexibility. U. S. Royal friction surface provides superior traction on pulleys. Roll and cut lengths or made endless by patented U. S. Royal-Splice or by 'round and 'round method.

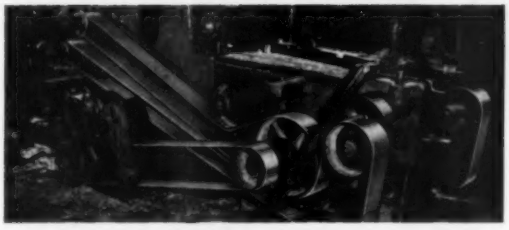


U. S. RAINBOW TRANSMISSION BELT

Folded edge construction. A general purpose belt known for outstanding operational economy and for maximum dependability in severe service. Duck is woven to give strength and flexibility lengthwise and body stiffness crosswise. Special friction between plies assures remarkably long flexing and aging life.

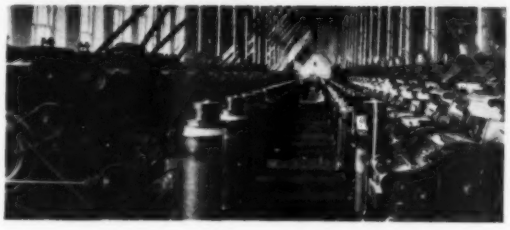
U. S. ROYAL CORD ENDLESS BELTS

Royal Cord Endless Belts are designed for use on general purpose flat drives, ranging from light to heavy duty, where the use of low stretch, high tensile strength, extra flexible, premium construction, endless belting is mandatory. Furnished in seven weights; special constructions available for use under conditions of excessive oil, heat, abrasion and corrosive chemical fumes.



U. S. ROYAL JUNIOR TRANSMISSION BELT

Designed for small machine drives. Constructed of plies of tough cotton duck, thoroughly impregnated with specially compounded rubber. A light, flexible true-running, elastic belt that performs extremely well at high speeds and withstands frequent shifting. Royal Junior has a wide range of application and requires minimum care.



U. S. SPEEDAGE CORD ENDLESS BELTS

For use where long wear, smooth-running, high speed, small pulleys, shock absorption, infrequent take-up and oil resistance are encountered. Light enough to operate at speeds in excess of 10,000 F.P.M., and thin enough to operate over pulleys as small as ½" in diameter.

Whatever your power transmission problem may be get in touch with "U. S." for the latest in technical advice and help. Write to address below.

PRODUCTS OF

U.S.RUBBER

SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

Look for the "U. S." name when buying Transmission Belts.

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

IT PAYS TO OWN THE BEST

KENNEDY GYRATORY CRUSHERS ARE
BUILT STRONGER TO LAST LONGER

SYNCHRONOUS MOTOR BUILT INTO PULLEY ASSEMBLY

●

FORCED FEED LUBRICATION

●

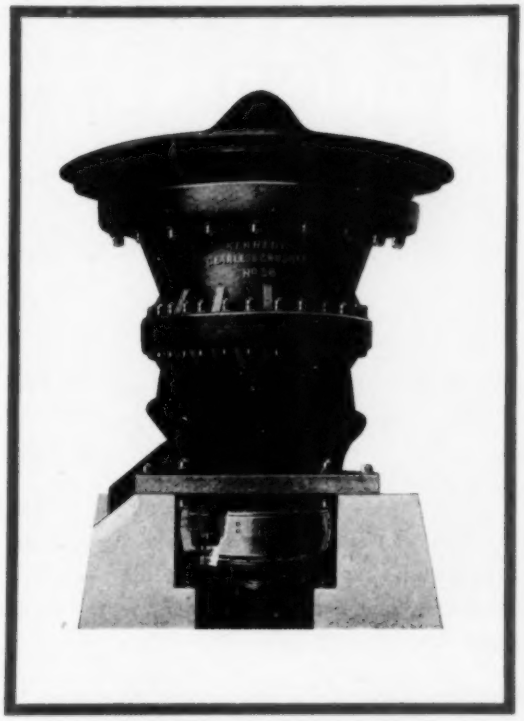
GREATER CAPACITY WITH USE OF LESS POWER IN ALL MODELS

●

TYPE "S" WITH ROLLER BEARINGS

●

DESIGNED TO CRUSH BUILT TO LAST



GEARLESS PRIMARY CRUSHERS BUILT IN CAPACITIES TO SUIT EVERY PURPOSE

FRICTIONLESS, SMOOTH, QUIET ACTION

●

NO GEARS TO WASTE POWER

●

POWER APPLIED ONLY FOR CRUSHING

●

KINETIC ENERGY ADDS POWER AT NO EXTRA COST

●

COSTS LESS TO OPERATE

A primary crusher, designed to produce maximum loads of uniform products, economically and consistently regardless of operating conditions. Extremely rugged construction assures freedom from costly shut-downs for repairs . . . cuts maintenance costs . . . uses lower power consumption . . . LASTS LONGER without maintenance than any other similar crusher.

Delivers more rock tonnage, faster and at lower cost, than any other similar crusher. Built in sizes from 12 to 1,000 tons per hour capacity. Uses no gears, belts or countershafts . . . eliminates frictional losses . . . increases efficiency . . . adds to profits.

The KVS oiling system has been pronounced perfect. Four barrels of oil per hour constantly pumped through bearings without waste. These crushers have been known to run for years without renewals to eccentric. This is why USERS say, "It Costs Less to Own the Best."

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE, NEW YORK 16, N. Y.

The IMPROVED STRATIFIED
AIR SWEPT TUBE MILL SYSTEM

That → **LOWERS**
GRINDING COSTS
POWER CONSUMPTION
MAINTENANCE COSTS

This KVS Stratified Air Swept Tube Mill represents the most forward step in cement making within the past 100 years. For example: A KVS Stratified Mill, 10′ x 22′ does the work of an ordinary mill 40′ long.

By comparison, the resultant savings in the cost of installation, power consumption, balls, wear and tear, time lost for repairs and adjustments, man-hours and man-jobs, more than pays the initial cost of a KVS mill within a ten-year period.

The KVS Stratified Mill not only handles raw material but becomes a combined drier and cooler, thereby serving a TRIPLE purpose. Users derive THREE TIMES the average benefits obtained from other models.

Marked economy of operation distinguishes this system and sets it apart as an air swept tube mill without rival. In use throughout the world, it is daily proving its worth and adaptability. Let a KVS engineer explain, or send for blue prints, illustrations and full engineering data demonstrating why users say "IT COSTS LESS TO USE THE BEST" — and they do mean KVS!

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

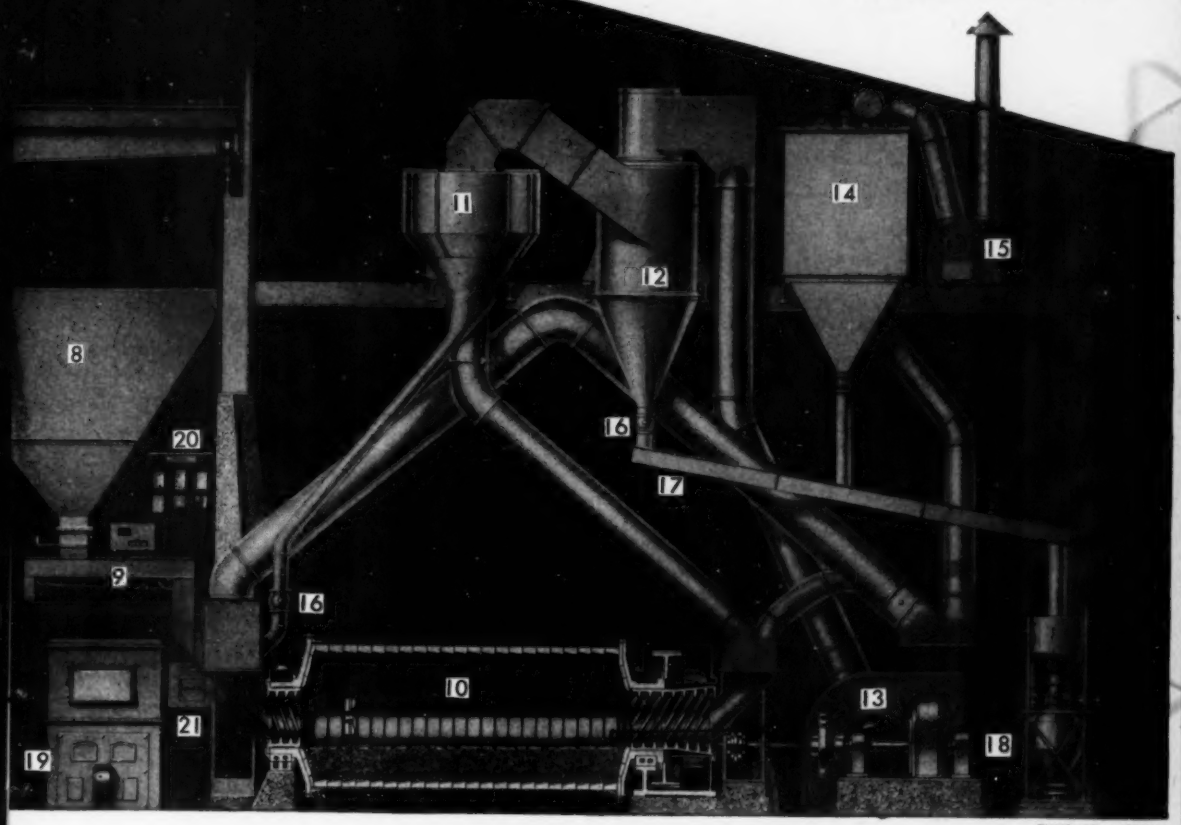
KENNEDY STRATIFIED

AIR SWEPT TUBE MILL SYSTEM

PATENTS PENDING

- **DRIES AND GRINDS SIMULTANEOUSLY**
- **AIR-COOLS CEMENT WHILE CLINKER GRINDING**

FOR RAW STONE, ORE AND CLINKER GRINDING



8 MILL FEED HOPPER
9 WEIGHING FEEDER
10 STRATIFIED AIR SWEPT TUBE MILL
11 RADIAL FLOW CLASSIFIER
12 CYCLONE COLLECTOR
13 MILL EXHAUSTER
14 DUST FILTER
15 DUST FILTER EXHAUSTER
16 ROTARY AIR LOCKS
17 FINISHED MATERIAL CONVEYOR
18 AUTOMATIC PNEUMATIC TRANSPORT PUMP
19 HOT AIR FURNACE
20 INSTRUMENT AND CONTROL CUBICLE
21 AUTOMATICALLY CONTROLLED TEMPERING AIR DAMPER

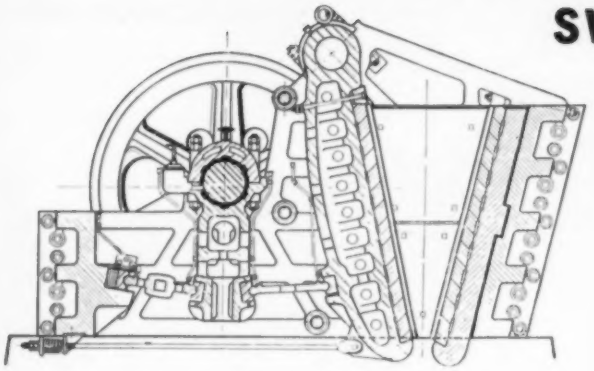
FINISHED MATERIAL TO STORAGE SILO

● ***This unit produces 94% plus through 325 mesh when clinker grinding 2" and finer***

2 PARK AVENUE • NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.

IT COSTS LESS TO OWN THE BEST

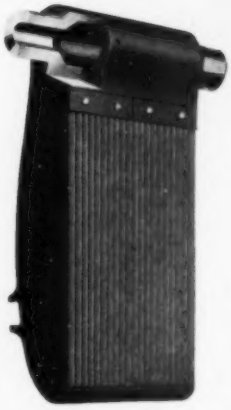
THE KENNEDY HEAVY-DUTY SWING JAW CRUSHER



BUILT TO YOUR SPECIFICATIONS IN ANY SIZE REQUIRED

Built with crusher openings from 7 inches to 66 inches . . . 6,000 to 600,000 lbs.

Frames of Herculite steel with tensile strength up to 60,000 lbs. per square inch.



Reversible Swing Jaws hold wear to an absolute minimum. Hard — Tough — Strong This Has Never Failed

POWER-PACKED, WITH THE STAMINA OF A TANK!

When you start right, you stay right and there is no better known system of economical operation than the use of equipment, designed to perform specific duties.

All KVS equipment is engineered to do the work for which it is designed at utmost efficiency. This means maximum output at minimum cost . . . long life . . . freedom from costly shut-downs for repairs and adjustments . . . ease of operation . . . low power consumption . . . uniform, high grade production.

Every claim of superiority for KVS products is based on field surveys and reports from users in every part of the world. It isn't hard to understand why these fine crushers continue to produce peak loads at minimum cost, year-after-year, when you realize that they represent top engineering skill, finest materials and manufacturing facilities without a peer.

Examine the blue prints and engineering specifications of any KVS crusher—they are available on request—and then judge for yourself the BASIC reasons why they deliver the most for the money under all operating conditions. Users say "It Costs Less To Own The Best" and they mean KVS.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE
NEW YORK 16

FACTORY
DANVILLE, PA.

WIRE COUNTERED PRIMACORD
Easy to Handle and Hook Up
Three Types of Primacord
WIRE COUNTERED PRIMACORD
Wire Countered Primacord is armored with closely stranded brass wire. This wire countering has 2 important advantages:
1. The wires increase the tensile strength of the Primacord to 220 pounds.
2. The wires resist abrasion; protect the Primacord during loading operations, or when it is used in ragged holes.
For these reasons, Wire Countered Primacord is recommended for use as down lines when the going gets rough.
Easy to Handle and Hook Up

is in the picture when the going gets *Rough*

Armored to resist highly abrasive conditions, Wire Countered Primacord is recommended for use as *down* lines in deep, ragged holes. The wire countering increases the tensile strength of the Primacord, and gives it added protection during loading operations.

The four grades of Primacord enable the blaster to meet every condition encountered in coal stripping, open-pit mining, quarrying, pipe-line river crossing, marine work, coyote tunnels, etc. Flexible, easy to hook up and handle, waterproof and insensitive to stray electrical currents, Primacord is the ideal detonating agent — the modern way to better output, greater economy.

Ask for a copy of the new Primacord Book.

THE ENSIGN-BICKFORD COMPANY

Simsbury, Connecticut P-52

Also Ensign-Bickford Safety Fuse — Since 1836

PRIMACORD-BICKFORD Detonating • Fuse •

Measure Up
7¼ to 79½ TONS
lift capacity
¼ to 2½ yards
dipper capacity
KOEHRING
COMPANY
Milwaukee 16, Wis.
K46
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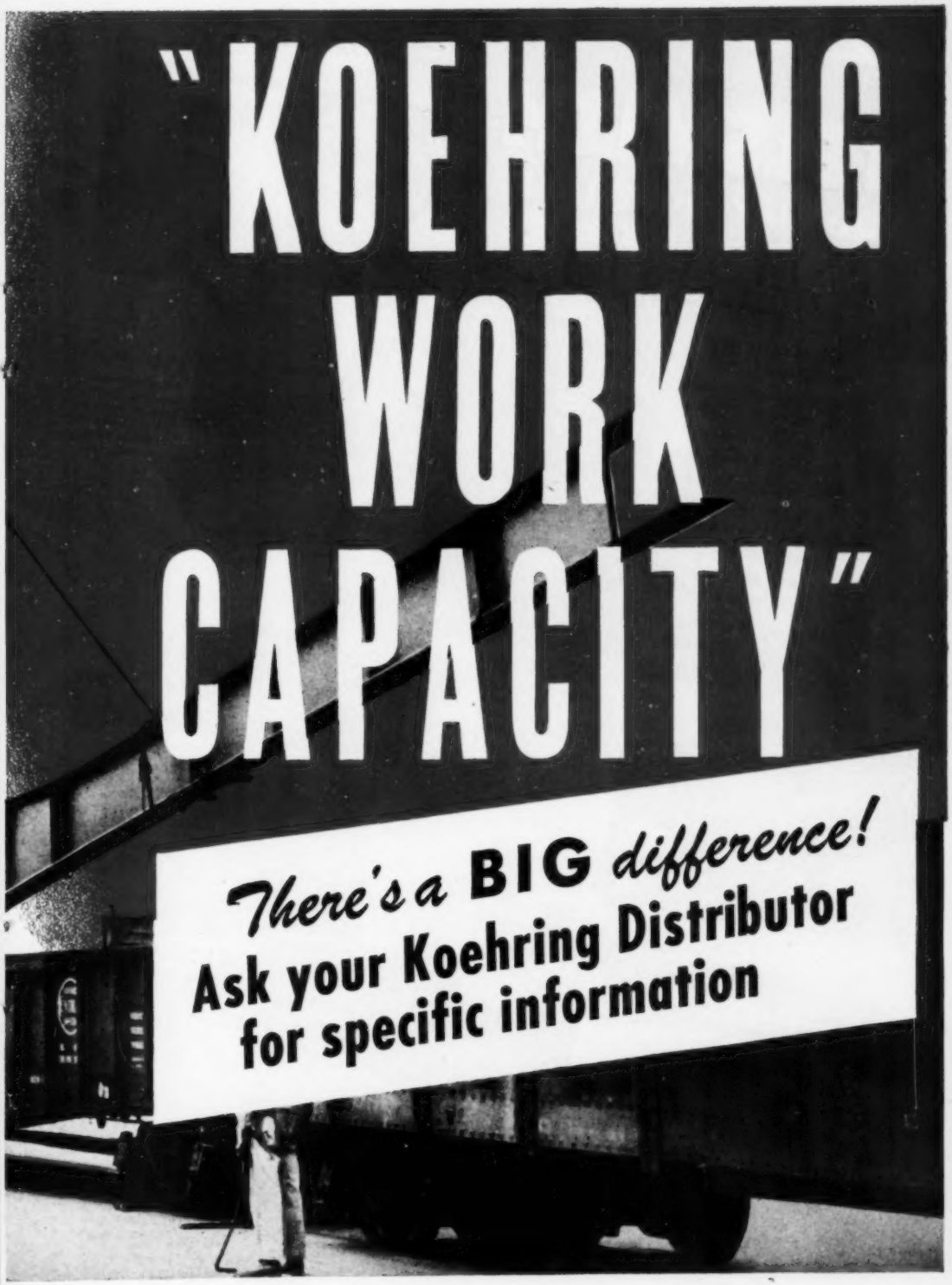
HEAVY DUTY
Subsidiaries: KWIK-MIX • JOHNSON • PARSONS


"KOEHRING
WORK
CAPACITY"
There's a BIG difference!
Ask your Koehring Distributor
for specific information

Everywhere...

TELSMITH
QUARRY and GRAVEL
PLANTS

Completely modern . . . their Telsmith equipment units matched, balanced and co-ordinated for most efficient operation . . . these quarry and gravel plants are typically Telsmith! With their larger capacity and wider product diversification; they turn out a better product with less power and lower upkeep. You can get equally trouble-free equipment and profitable operation—use Telsmith. Send today for Bulletin 266.

40 years of engineering know-how is at your disposal. Consult TELSMITH Engineers.

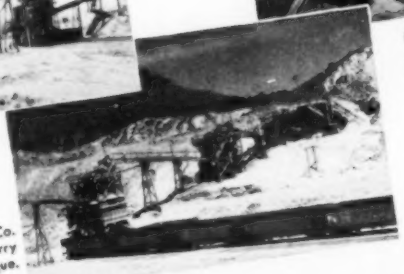
NEW YORK
Colonial Stone & Sand Co. modern, million-dollar plant, near Port Washington, Long Island

VIRGINIA
Arlington Stone Co., Leesburg, Va., produces crushed trap rock in 5 sizes to bituminous surfacing specifications.

OHIO
Camp Dennison, Ohio, all-Telsmith plant, one of six large plants of the Ohio Gravel Co., Cincinnati.

WASHINGTON
Alongside the Columbia River . . . crushing and washing plant of Howard Smith, Vancouver, Wash.

GEORGIA
Tyrone plant, Tyrone Rock Products Co. of Atlanta



WISCONSIN
Waupaca Sand & Gravel Co. plant, Custer, Wis., owned and operated by F. F. Mengel Co.

NEW MEXICO
Sharpe & Fellows Contracting Co. of Los Angeles, Calif., quarry plant near Albuquerque.

MP-6-R

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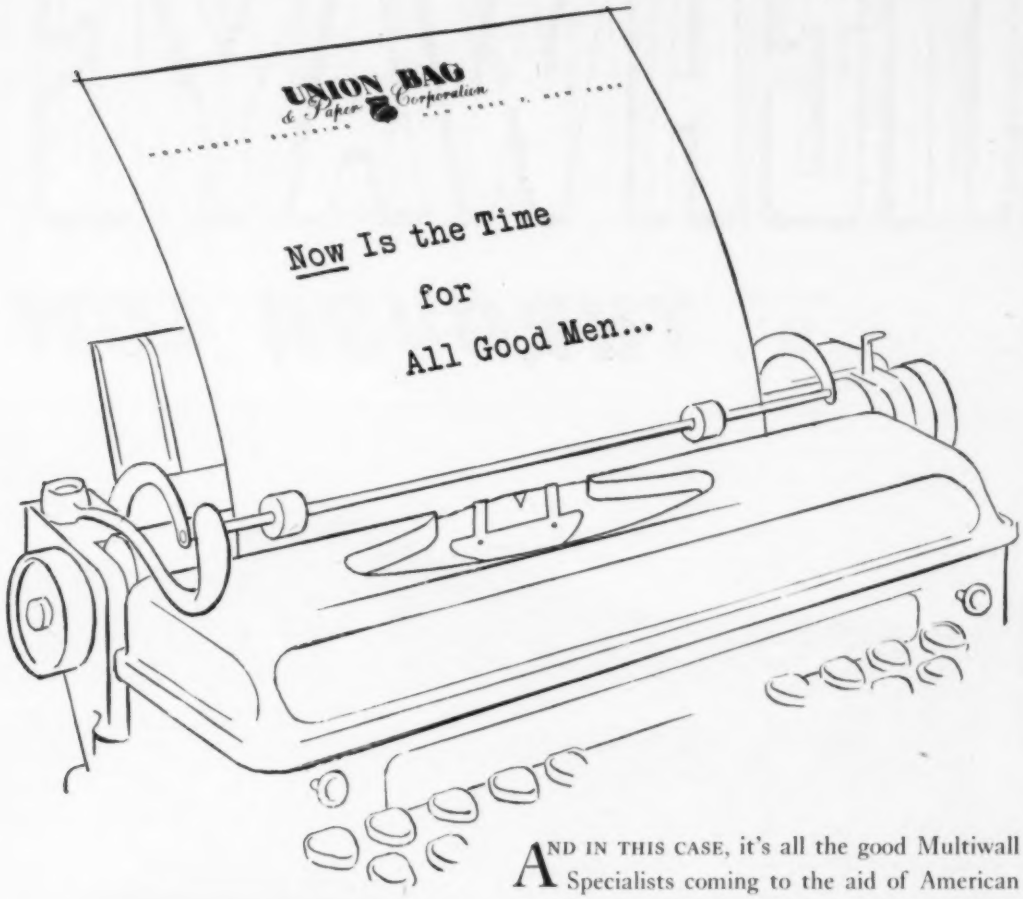
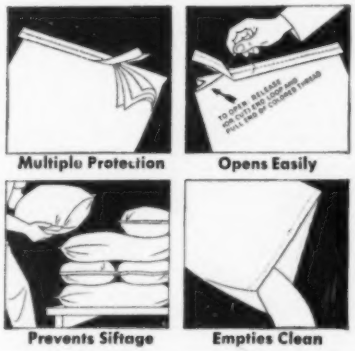




AND IN THIS CASE, it's all the good Multiwall Specialists coming to the aid of American manufacturers whose packaging problems are increasing with the national emergency.

Union's Multiwall Specialists are anxious to help, with whatever changes of material, or design may be required because of the nation's demands—which in these days come first, of course.

Let a Union Multiwall Specialist study your packaging problem. There is no obligation, and his recommendation may help you meet pressing needs faster, better.

UNION Multiwall Bags

UNION BAG & PAPER CORPORATION

233 BROADWAY, NEW YORK 7, NEW YORK

TRADE MARK UNION

HIGHWAYS

THROUGH LOW

THE IOWA LINE *of Material Handling Equipment Includes:* ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • BUCKET ELEVATORS • VIBRATOR AND REVOLVING SCREENS • UNITIZED ROCK AND GRAVEL PLANTS • FEEDERS • TRAPS • PORTABLE POWER CONVEYORS • PORTABLE AND STATIONARY STONE, GRAVEL AND SAND PLANTS • REDUCTION CRUSHERS • BATCH TYPE AND VOLUMETRIC TYPE ASPHALT PLANTS • DRIERS • DUST COLLECTORS • HAMMERMILLS • DRAG SCRAPER TANKS • WASHING PLANTS • VIBRATING SOIL COMPACTION UNITS • DOUBLE IMPELLER IMPACT BREAKERS

UNLIMITED

COST AGGREGATE

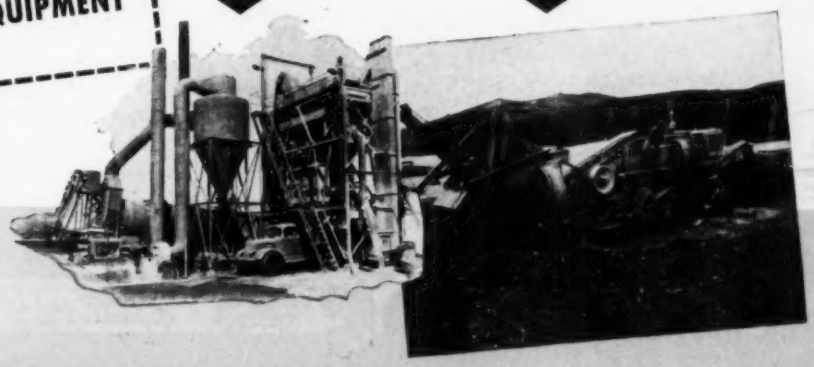
TODAY'S production of more and better aggregate *at lower cost* means highways unlimited for America's future . . . and unlimited opportunities for you. Roads—both black top and concrete—bridges, dams, buildings and so many other construction projects, need hundreds of millions of tons of aggregate.

When you figure future contracts, plan on the bidding advantages you get with Cedarapids equipment. Whether you need a single unit or a complete plant, for aggregate or black top, Cedarapids assures the low cost production and operation that keeps you ahead of the competitive parade. Your nearest Cedarapids distributor will be glad to give you all the details.

Cedarapids
Built by IOWA
headquarters for
Quality EQUIPMENT

MODEL "E"—the largest of the Cedarapids line of bituminous mixing plants will handle up to two tons at a batch for your big jobs. Or—if you need only a few loads for patching—use the Cedarapids continuous-mix type Patchmaster. Whatever equipment you require for mixing your black top, check with Iowa first for the best—complete plants, pug mills, driers, feeders, bins.

The JUNIOR TANDEM—best known of the Cedarapids portable plants sets the standard for quality production, big capacity, flexibility, low maintenance and trouble-free operation on average size gravel jobs. When big volume is required, pick the Master Tandem and for the smaller jobs—the Pitmaster. Add a Cedarapids Portable Primary and you have a rock plant. With Cedarapids equipment, you can meet any specification in any quantity.



IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U. S. A.

THE EUCLID WAY

to

LOWER HAULING COSTS

Designed and built to move big loads of rock and heavy excavation, Rear-Dump "Eucs" are cutting haulage costs at quarry and open pit mining operations in all parts of the world.

Here's one example: seven Rear-Dump "Eucs" of 15-ton capacity replaced an industrial rail system at a quarry of the Consumers Company at McCook, Illinois. Hauling costs have been cut 40 per cent.

Two shovels of 3½ yd. capacity load the well-blasted stone into Euclids for a haul of 3,070 feet to the plant. Maximum grade on the loaded haul is 9.5%. During an eight-hour shift, the Euclids make 340 trips, hauling 5,440 tons. Production of lime and crushed stone for agricultural and industrial use averages from 600 to 700 tons per hour.

Your Euclid Distributor will be glad to show you the Euclid way to lower hauling costs on your quarry or open pit jobs. If you prefer, write direct for information on the complete line of Euclid equipment for moving earth, rock, coal, and ore.

The EUCLID ROAD MACHINERY Co., Cleveland 17, Ohio

EUCLIDS *Move the Earth*

You get practical help

on lubrication and maintenance problems

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One of the best sources of help on any problem that involves lubricants or lubrication is a trained Gulf Lubrication Engineer.

Gulf Lubrication Engineers are experts in petroleum technology—they are familiar with refining processes, properties, and the past performance records of various types of lubricants. They completely understand the effect of different operating conditions on lubricants. And, just as important, they know the lubrication requirements of all types of quarry and rock processing equipment. The application of this knowledge and experience to each individual problem helps reduce maintenance costs and improve equipment performance.

To get the benefits of this expert engineering service for your equipment, call in a Gulf Lubrication Engineer today. Write, wire, or phone your nearest Gulf office. Gulf Oil Corporation · Gulf Refining Company, Gulf Building, Pittsburgh 30, Pennsylvania.

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Want to Move a Mountain in a *Hurry?*

● The equivalent of a mountain must be moved in a few years to produce a profitable operation in many mines, quarries, coal stripping operations and big construction jobs.

If your requirements call for several years of high-yardage production in the toughest kind of digging, you'll want to know about the MARION 151-M.

It was developed expressly for companies that need to get big jobs done quickly and dependably. Examine the 151-M in detail—see its rugged, heavy-duty electrical system—its sheer strength and size—its record of dependability in the heaviest kind of work. Your nearest MARION sales office can give you the details—or contact the sales headquarters at Marion, Ohio.

MARION

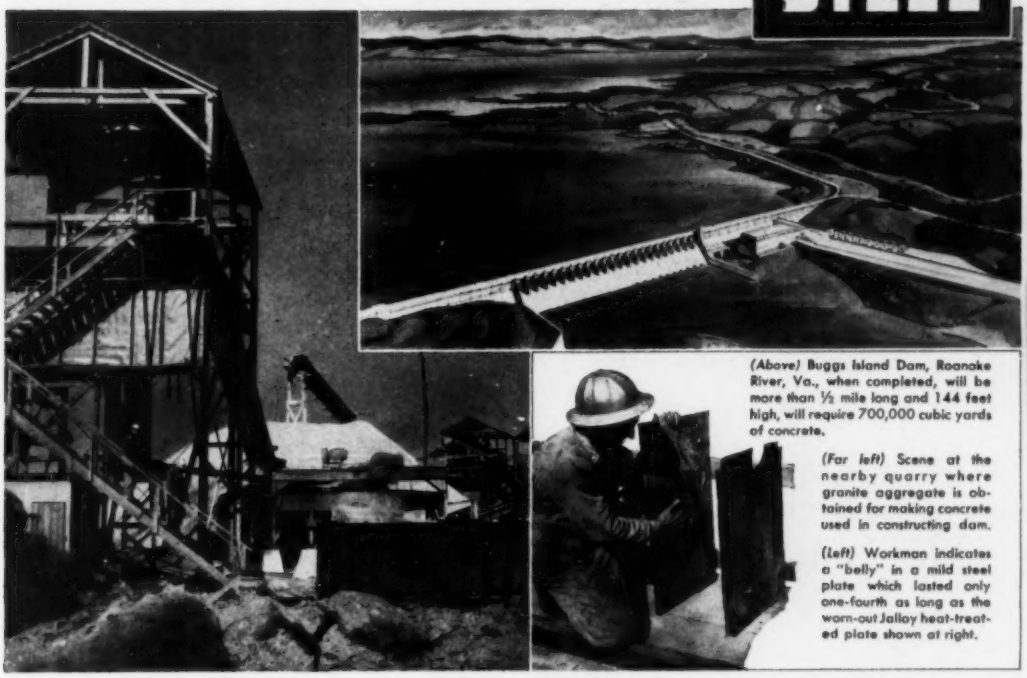
POWER SHOVEL COMPANY

MARION, OHIO, U. S. A.

Offices and Warehouses in all Principal Cities • Established 1884

$12,500 SAVED in construction equipment maintenance with first 45 tons of Heat-treated JALLOY STEEL PLATE

J&L STEEL



(Above) **Buggs Island Dam, Roanoke River, Va., when completed, will be more than ½ mile long and 144 feet high, will require 700,000 cubic yards of concrete.**

(For left) **Scene at the nearby quarry where granite aggregate is obtained for making concrete used in constructing dam.**

(Left) **Workman indicates a "belly" in a mild steel plate which lasted only one-fourth as long as the worn-out Jalloy heat-treated plate shown at right.**

JALLOY Heat-Treated Plate lasts 4 to 5 times as long as mild steel in handling crushed stone for Buggs Island Dam

Buggs Island Dam, across the Roanoke River near South Hill, Va., is being constructed by Department of the Army, Corps of Engineers, Norfolk District. Granite is blasted from a quarry three miles from the dam site and crushed into various sizes. In moving and handling this hard abrasive rock, *worthwhile* savings are being made by using heat-treated JALLOY plate for: Chutes, screening equipment, truck bodies, shovel-dipper teeth and similar materials-handling applications.

At the quarry, operated by Ralph E. Mills and Gorman Bros., Inc., direct comparisons show that heat-treated JALLOY plate lasts an average of 5 times as long as mild steel. During the first 11 months, approximately 25 tons of JALLOY heat-treated plate were installed at the quarry.

At the dam, Jones-Tompkins-Wright, Contractors, installed approximately 20 tons of heat-treated JALLOY plate during the first 10 months of operations. Here JALLOY lasts on an average of 4 times as long as mild steel.

At both locations, approximately 45 tons of JALLOY heat-treated plate have effected a saving in the cost of steel for maintenance alone of more than $10,000. Labor savings in man-hours worked by maintenance crews have been conservatively estimated at more than $2,500.

Wherever heat-treated JALLOY plate is used to resist abrasion and impact, similar results are being obtained. Little wonder that this manganese moly steel is becoming so popular in materials-handling operations. Let us send you our booklet, "For Longer Wear . . . Less Repair." It describes how others are saving money with heat-treated JALLOY Steel Plate, The Mining and Quarrying Steel.

Jones & Laughlin Steel Corporation
415 Jones & Laughlin Building
Pittsburgh 30, Pa.

Please send me a copy of: "For Longer Wear . . . Less Repair—JALLOY—J&L Special Alloy Steel."

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COMPANY_____

ADDRESS_____

JONES & LAUGHLIN STEEL CORPORATION

From its own raw materials, J&L manufactures a full line of carbon steel products, as well as certain products in OTISCOLOY *and* JALLOY *(hi-tensile steels).*

PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS

KEEP YOUR HANDS *Out* of cement handling!

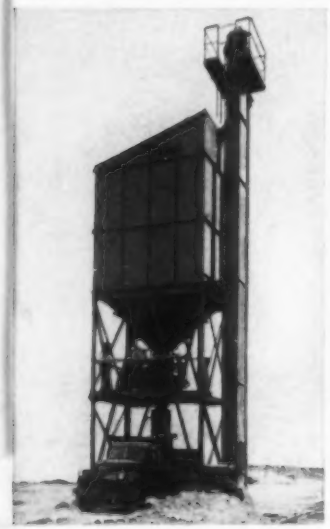
Handling bag cement is hard on the back and tough on the pocket-book. These 3 Erie Cement Plants take bulk cement mechanically from cement cars via undertrack screw and bucket elevator to the storage bin. Whatever your cement requirements there is Erie Cement equipment to meet your needs.

The Type "M" series at the left in 4 standard capacities will store from 172 to 600 bbls. in a portable-type plant.

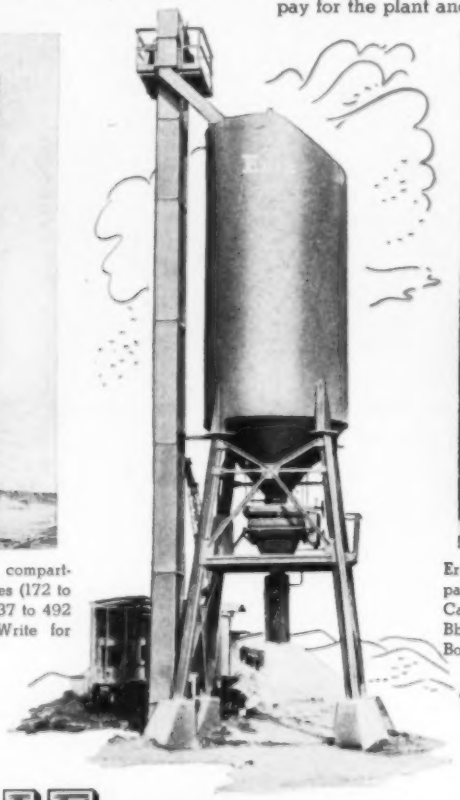
The Type "L" series at the right in 3 capacities 575 to 1025 bbls. offers a knock-down or semi-portable plant for the large cement user.

The CSB-Series the "silo type" offers two diameters (11 and 12 ft.) and 5 standard capacities in each to provide storage for 274 to 1014 barrels of cement.

Give Erie engineers the description of your cement needs and their recommendations will speed your cement batching, save enough over bag handling to pay for the plant and eliminate cement waste.



Erie Type "M" portable single compartment cement plant in 4 capacities (172 to 194 Bbls.) (270 to 304 Bbls.) (437 to 492 Bbls.) (525 to 600 Bbls.). Write for Booklet M-3.



Erie Type "L" Single and Double Compartment Cement Bins standardized in 3 Capacities (575 to 645 Bbls.) (685 to 770 Bbls.) (910 to 1025 Bbls.). Write for Booklet L2

Erie CSB 592 Bbls. (11 ft. dia.) "Silo" Cement Bin shown. Available in 11 and 12 ft. diameters in 5 sizes each—also widely used for added recirculation ground storage in any capacity desired. Write for data.

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STEEL CONSTRUCTION COMPANY

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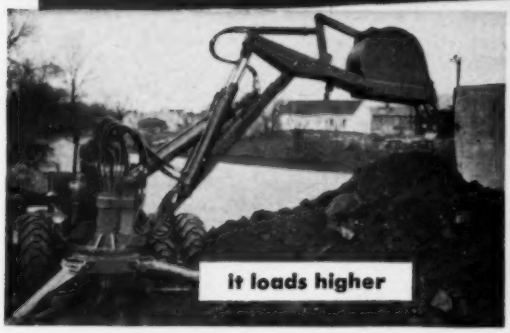
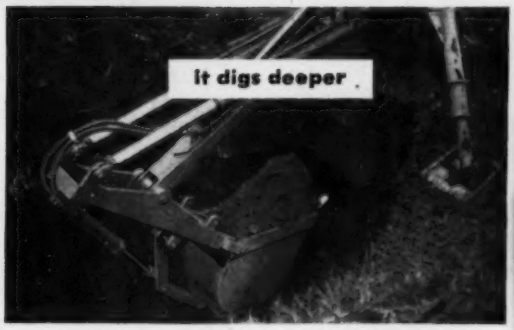
Now... It's even better!

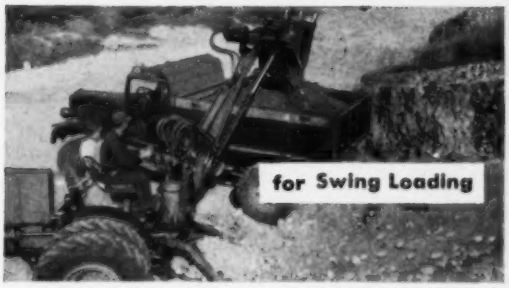
THE OLIVER-WARE Hydro-Trencher

It's Smoother Operating...
No hesitation or "jerks" in the smooth application of hydraulic power. You get smoother, easier handling... more positive control with less operator fatigue.





..and it has a Sensational New "Forced Ejection" Bucket



By simply reversing the bucket and dipper stick, you get a swing loader that loads out material faster than you'd believe possible. "Forced ejection" bucket is available as optional equipment. Standard trencher bucket and standard swing loader bucket are available at slightly lower cost. With standard loader bucket, loading height is 12 feet. Loading height with "forced ejection" bucket is 12½ feet.

The "forced ejection" bucket gives you quick, clean, complete discharge of even the stickiest materials. Bucket gate is hydraulically controlled and travels the complete length of the bucket to "force" out all material.

For complete information on this all-hydraulic, tractor-mounted trencher and swing loader, see your Oliver Industrial Distributor or mail the coupon.

Have you seen the Oliver color movie, "Task Force on Wheels"? Your Oliver Distributor will be happy to arrange a showing.

THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of Industrial Wheel and Crawler Tractors

The OLIVER Corporation Industrial Division
19300 Euclid Avenue, Cleveland 17, Ohio

Gentlemen: ( ) Send me the facts on the improved Oliver-Ware Hydro-Trencher. ( ) I would like to see the Oliver color film, "TASK FORCE ON WHEELS."

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Company.....

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When the going's rugged...

that Pioneer Edge

Contractor Praises Pioneer Equipment

It wasn't by accident that Winston Bros. chose a Pioneer plant to handle this rough, tough "Ridge Route" job. The firm is well acquainted with the advantages of Pioneer equipment.

Just recently they told us, "We have three of your quarry and washing plants on our projects in Colombia, South America. Project managers report very satisfactory results with little delay caused by breakdown. This is very important because the equipment is so far from the source of supply."

BUY BOTH!
HIGHER OUTPUT
LOWER UPKEEP

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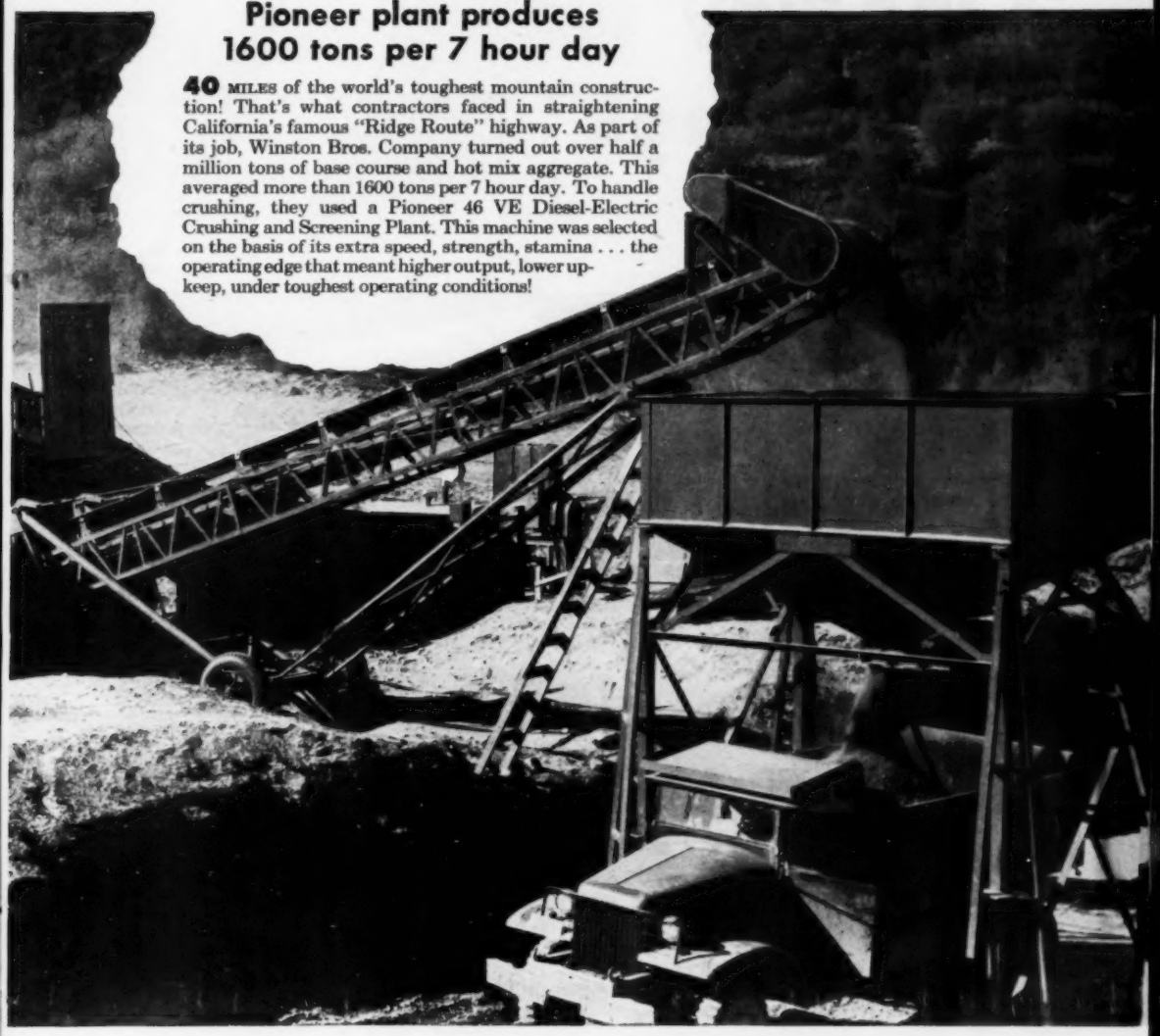
sees you through

Pioneer plant produces 1600 tons per 7 hour day

40 MILES of the world's toughest mountain construction! That's what contractors faced in straightening California's famous "Ridge Route" highway. As part of its job, Winston Bros. Company turned out over half a million tons of base course and hot mix aggregate. This averaged more than 1600 tons per 7 hour day. To handle crushing, they used a Pioneer 46 VE Diesel-Electric Crushing and Screening Plant. This machine was selected on the basis of its extra speed, strength, stamina . . . the operating edge that meant higher output, lower upkeep, under toughest operating conditions!



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The operator who has an edge in equipment has a very definite advantage in bidding. Pioneer equipment gives you an operating edge over and above its rated performance. Before you bid on your next job . . . check with Pioneer.

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*Name*_____

*Company*_____

*Address*_____

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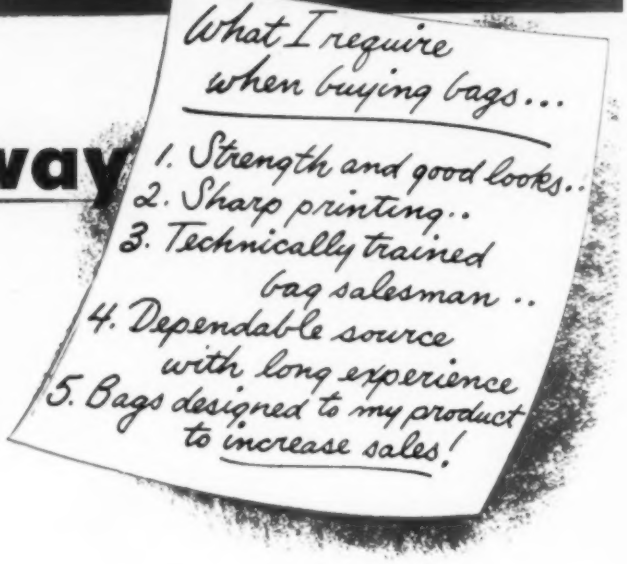
One way to buy bags and the right way


What I require when buying bags...
1. Strength and good looks..
2. Sharp printing..
3. Technically trained bag salesman ..
4. Dependable source with long experience
5. Bags designed to my product to increase sales!

"By Rule of Thumb" may do for some decisions. When buying bags, however, thought should be given to this important purchase. You'll want the container that protects your product . . . that is designed for your product . . . that assures the best acceptance of your product. Call in your Chase Salesman. He's technically trained to analyze your requirements. He's supported by more than a century of experience in providing bags for American industry and agriculture.

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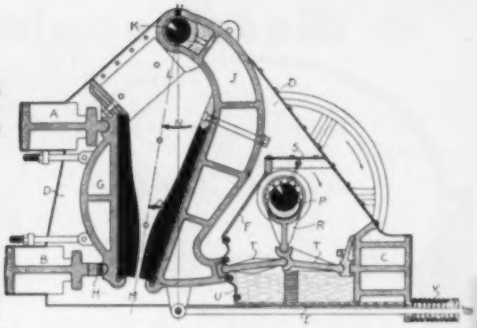
MODERNIZE with KUE-KEN*

Only Successful New Crusher Design in 90 Years

Exclusive New Principle of "Crushing Without Rubbing" Gives 5-10 Times Longer Jaw Plate Life More Capacity on Less Power Check the Many New Features



THE HINGE PIN in the Kue-Ken Crusher is on the center line of the crushing zone. As the jaw swings back and forth, it describes an arc which is square to both crushing faces. There is practically no upward movement, so rocks are "Crushed Without Rubbing." Jaw plates last 5 to 10 times longer.

CAPACITY is directly proportional to number of crushing strokes per minute other things being equal Kue-Ken Crushers, with a single lightweight drivewheel and relatively lighter moving parts, run at 375 strokes per minute year after year, which is 25-50% faster than ordinary crushers, thus capacity is 25-50% greater.

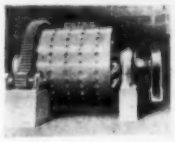
LUBRICATION. All mechanism runs in a sealed, filtered "crankcase type" oil bath. Servicing required only twice yearly.

POWER is used for crushing rock, not wearing out jaw plates.

SAFETY DEVICE for tramp iron and overload protection is simple and easily reset. No shearing or breaking parts.

Kue-Ken crushes squarely without rubbing because the hinge pin "K" in figure is located where it should be, and substantially on the line "LM" passing through the center of the crushing zone formed by the two jaw plates. Therefore, all parts of the swing jaw "J," swinging freely from the hinge pin, "K," must follow the paths of arcs as shown by arrows "N" and "O." Note how these arrows pass squarely through the center line of the crushing zone. Check them yourself with a pencil compass. Rock is gripped instantly and crushed quickly —without rubbing and abrasion—not forced upwards. Wear and power are reduced to the *minimum*—capacity is *maximum*.

LONGER JAW PLATE LIFE AND BONUS CAPACITY GIVES LOWEST COST CRUSHING TO KUE-KEN USERS.



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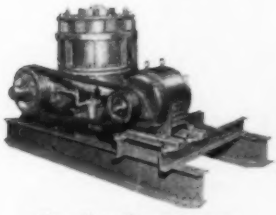

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Overstrom Screens

Straub Mfg. Company
442 Chestnut Street, Oakland 20, California

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JAW CRUSHERS ☐ BALL MILL ☐
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*Pronounced Que-Ken. U.S. and Foreign Patents Pending.

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Kue-Ken Balanced Crushers	Rib Cone Ball Mills	Overflow Classifiers
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Before you buy
a diesel engine

...be sure and read this booklet!

A sound basis of comparison is essential to the selection of the proper diesel engine to meet your power requirements. And that's just what the booklet *"10 Questions to Ask a Diesel Engine Salesman"* gives you. If you want economy, dependability and long engine life this booklet will show you what to look for in a diesel engine.

In addition, the *"10 Questions"* booklet describes fully the Murphy Diesel line of heavy duty "true" diesel engines, giving design details and basic specifications. No diesel power user or prospective diesel power user should be without this helpful 28-page booklet. Write for your copy, mentioning your company affiliation and position.

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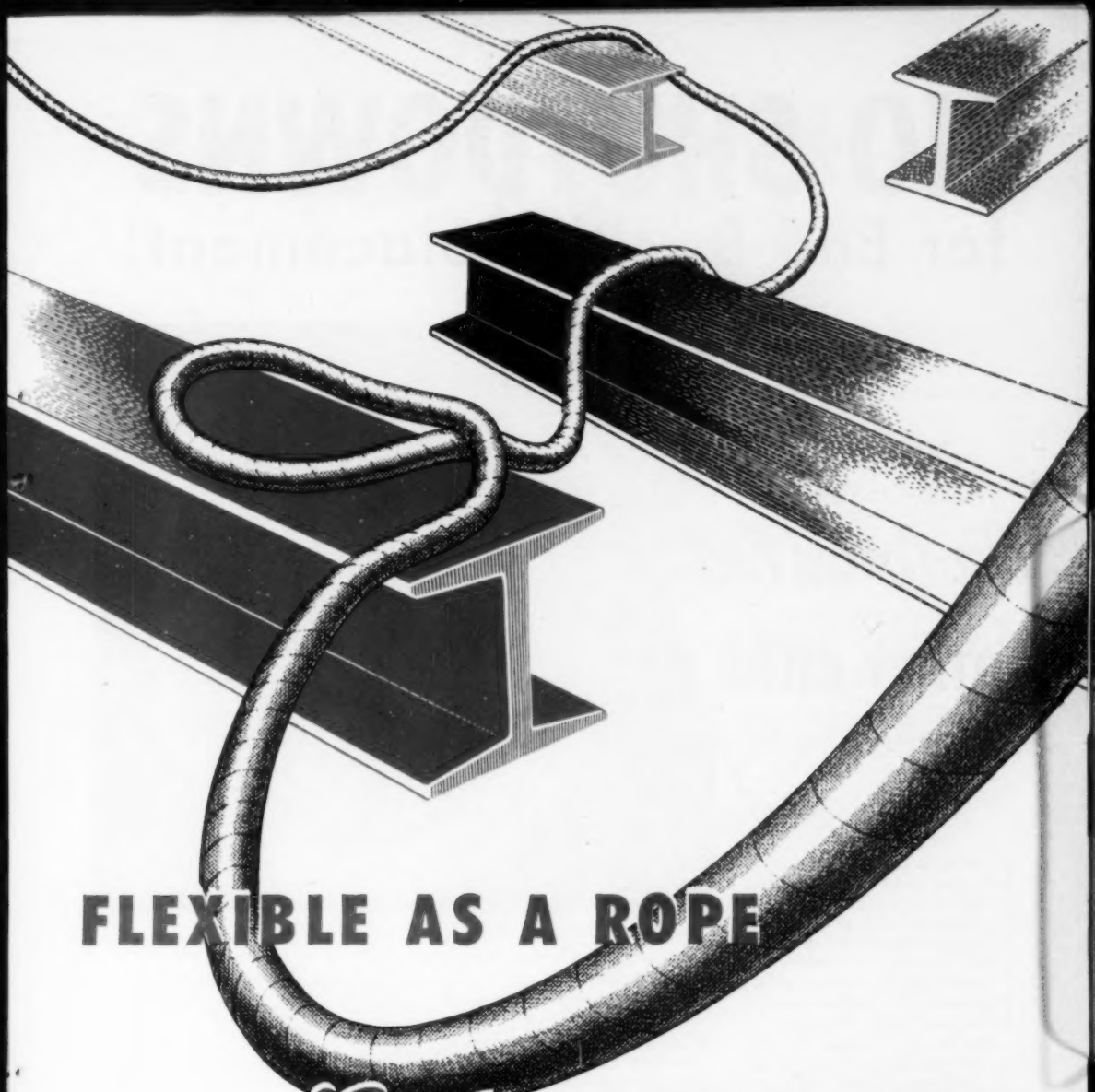
for fishing

Murphy Diesel marine propulsion engines and auxiliaries are made in sizes from 90 to 190 H.P.; marine type generator sets from 60 to 133 K.W.



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for End Brick Replacement!

WITH THIS
ALLIS-CHALMERS
Air-Cooled End
FOR
ROTARY KILNS

GET RID of nose brick troubles for good with the Allis-Chalmers air-cooled kiln end shown above. The segmental alloy steel retaining ring forms a channel through which a blast of cooling air is forced.

Result: No kiln warpage; refractory brick lasts as long at discharge end as at any point along the kiln.

This one feature alone will, during the working life of the kiln, *pay for itself several times over* in reduced downtime and increased production . . . in lower refractory costs and longer kiln life.

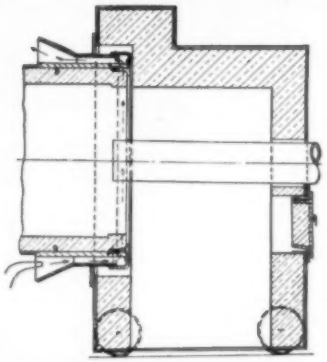
Air-cooled kiln end design makes possible the use of a more positive air seal, resulting in fuel savings.

Other important features of Allis-Chalmers rotary kilns:

- **Extra thick shell at discharge end and under riding rings.**
- **Centralized instrument control of the entire operation.**
- **Modern heat recuperation equipment. Constant delivery feeders and all auxiliary kiln equipment.**

Get more facts from the A-C representative in your area, or write for **Bulletin 07B6368**, Allis-Chalmers, Milwaukee 1, Wisconsin. A-3281

Texrope is an Allis-Chalmers trademark.



Sketch shows arrangement of movable firing hood with air-cooled kiln end.

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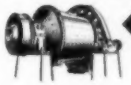
Grinding Mills

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High Voltage Cable

No metal armor or lead sheath, yet . . .
There's even greater mechanical and electrical protection in the combination of *neoprene jacket* and *butyl insulation.*
Together they provide:
Unequalled protection from impact, crushing, twisting and abrasion.
Higher dielectric strength.
Greater resistance to moisture, acids, oils, ozone, heat and flame.
Less weight, more flexibility; easier to handle, install, splice and maintain. Lower first and final costs!

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the right cable for the job

ANACONDA®

WIRE AND CABLE

HERE'S WHAT USERS SAY ABOUT THE DEMPSTER-DIGGSTER—

"IT'S THE FASTEST, MOST EFFICIENT EXCAVATING TOOL I HAVE USED"

—A. J. METLER, *Contractor*

"During the past several years," Mr. Metler says, "I have owned and operated four conventional full revolving crawler and truck mounted shovels and cranes and know that they have a direct application to many types of excavating work.

"On the other hand, I have learned that the fast operation of the tricycle mounted Dempster-Diggster permits it to be used on certain types of work to a considerable advantage. Its mobility permits quicker transfer from one job to another.

"I have had excellent results from the Dempster-Diggster and consider it the fastest and most efficient excavating tool I have used."

Mr. Metler is one of the many contractors who has found the Dempster-Diggster to be "the fastest and most efficient excavating tool" available.

This speed and efficiency in excavation work is accounted for, mainly, by the Diggster's exclusive independent hydraulic crowd and hoist action, its hydraulic steering and wheel-type traction.

The power crowd permits bucket to keep digging until loaded . . . no digging with wheels. The hydraulic steering gives the driver sensitive, easy, finger-tip control. When accelerated, a one-handed twist of the steering wheel puts the machine in any desired position. By operating on rubber-tired wheels, the Diggster, of course, can move at the fastest possible speed on the job and to and from jobs.

The Type HL Dempster-Diggster is equipped for extraordinary high dumping. The bottom of bucket is 13 feet six inches above ground.

HERE IS THE NEW TYPE HL DEMPSTER-DIGGSTER shown excavating with a 1¼ cu. yd. (heaped) digging bucket. The Type HL Dempster-Diggster will dig through an 18 foot bank while the Type GRD digs through a 15 foot bank.

The Dempster-Diggster is a "must" for contractors, large or small operators alike.

The Dempster-Diggster has a 15 foot turning radius, is 20 feet long when bucket is in traveling position, and is nine feet and six inches in height.

Four standard interchangeable buckets of two types are available. Digging buckets with four bottom teeth in 1 and 1¼ cubic yard (heaped) capacities, and materials handling buckets in 1½ and 2 cubic yard (struck) capacities.

For fast, efficient operation in difficult terrain, the Diggster is available with crawler-type traction.

"I have not personally used the Dempster-Diggster mounted on crawler treads," Mr. Metler said, "but have seen it in operation on jobs adjacent to mine. I know it is a very effective tool and has many applications."

Construction men have found that on big jobs the Dempster-Diggster has no equal for working in tight places and for freeing big shovels for heavier work. The Diggster has an 8 foot 10 inch crowing reach, will dig through a 15 foot bank, and will dig 15 inches below grade.

Pound for pound, the Dempster-Diggster will out dig and out load any other available competing machine in tough going! Let us prove that statement!

Write today for complete information and prices. The Dempster-Diggster is a product of Dempster Brothers, Inc.

This is the type GRD Dempster-Diggster, which Contractor A. J. Metler considers "the fastest and most efficient excavating tool I have used." It is shown digging 15 inches below grade.

DEMPSTER DIGGSTER

DEMPSTER BROTHERS

213 N. Knox

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Big plows 12 yards of material on cliffside fill in 25-to 35 seconds. In addition to these 3 Tournarockers, the contractors' earthmoving fleet includes 14 Super C Tournapulls, 3 LeTourneau Wagons, and 10 Model W Carryall Scrapers.

Oversize, disc-type air brakes on all 4 wheels (4176 sq. in. total braking surface) let Tournarocker operators drive down narrow 30% grades with complete safety and confidence.

Lookout Point Dam will be completed across the Middle Fork of the Willamette River near Lowell, Oregon, in 1953. One section of work now in progress involves relocating 2 miles of State Highway 58 and 2 miles of Southern Pacific rail line above the reservoir area at Goodman Bluff. Approximately 1,236,000 cu. yds. of rock and 917,000 cu. yds. of common earth have to be moved... most of it from canyon slopes ranging from 1:1 to vertical. Leonard & Slate Oregon Ltd. and E. C. Hall Co. of Portland share the 2,153,000-yd., 18-month federal contract... and have assigned the most difficult hauling on it to 3 LeTourneau 16-ton, rear-dump Tournarockers. Here's typical performance:

Make 24 trips hourly on 3200′ cycles

On one section of the job, the Tournarockers have 400′ of one-way travel down 30% grade... 1000′ along existing highway through heavy traffic... and 200′ on the rough unfinished fill. The entire 0.3 mi. stretch is narrow and

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- ☐ 35 m.p.h., 16-ton Tournarocker
- ☐ 28 m.p.h., 19-ton Tournarocker
- ☐ 30 m.p.h., 35-ton Tournarocker

lick 30% grades Highway

Tournarocker turns around within 73'9", speeds quickly under rock shovel. Ordinarily, each "C" is loaded with 12 pay yards of rock and clay overburden in 2½ to 3 minutes. Combined production for all 3 units averages 2400 yards per day.

winding . . . there are some delays for traffic . . . and "elbow room" at both shovel and dump is severely limited . . . yet each "C" completes a 3200′ cycle every 7 minutes.

3 units move 288 yds. hourly

Average haul speed, including complete stops for one-way traffic, is 9.8 m.p.h. . . . and average shovel-load is 12 pay yards. In one hour, each Tournarocker makes 8 trips . . . delivers 96 pay yards. This time study figure checks closely with over-all job production records, which show that on similar hauls, with 2 Tournarockers handling output of one shovel, each LeTourneau rig has been averaging approximately 125 yards per hour.

Speed production during wet weather

One of the biggest problems on the Lookout Point job is the rainy season, which is usually 6 months long. Clay in the gravel-clay mixture is extremely slippery when wet, and makes a serious problem on the steep, narrow and winding haul roads. To meet these conditions, Tournarockers offer a number of distinct advantages. Their big 21.00 x 25 low-pressure tires improve traction. Power-proportioning differential applies up to 4 times more power to the wheel on firmest footing. Positive power steer shifts footing as needed for better pull. Powerful 4-wheel air brakes and Electrotarder provide ample braking action on steep grades. Front-wheel drive on prime mover lets the "C's" dump safely over the edge of fills because drive wheels are always on firm ground. Simple electric hoist raises body to vertical position . . . streamlined bowl clears even the wettest, stickiest loads in a few seconds.

Important savings for you

These same Tournarocker features which are helping Leonard & Slate and E. C. Hall lick steep slopes and rough going on this Oregon project, offer new low-hauling costs for your jobs, too. Ask your LeTourneau Distributor about this 16-ton, rear-dump hauler. He can also give you complete information on 9, 35 and 50-ton Tournarockers. You get both job and profit insurance with all Tournarocker sizes, because you can use the 2-wheel prime mover to power other interchangeable units, including Carryall Scrapers, bottom-dump hoppers, flat-beds, haulers, and cranes. Call him, or write TODAY.

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WITH AN 11 YEAR TROUBLE-FREE SERVICE RECORD!

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for Low cost fine solids recovery...

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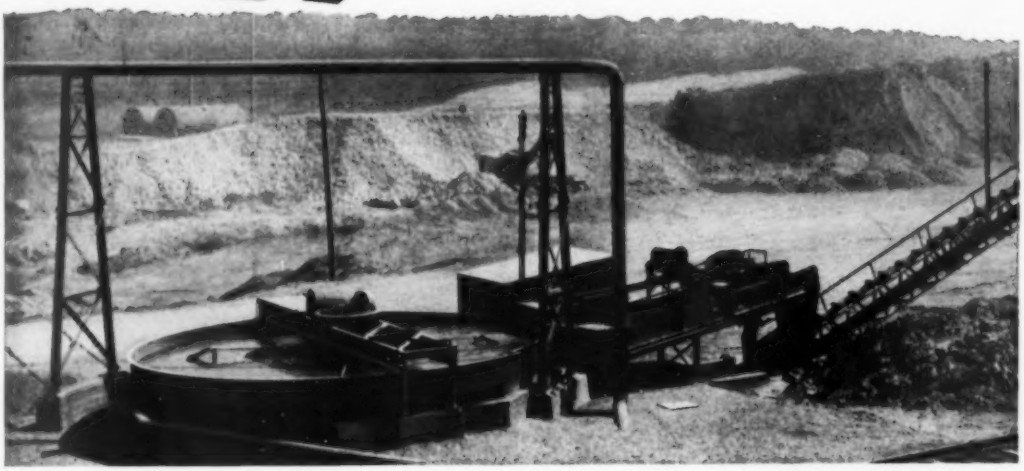
Here's an economical method for recovering fine solids—such as sand and agstone—from large quantities of water. The Dorrco Bowl Desiltor, a low cost modification of the Dorr Bowl Classifier, gives you just what you need for such operations . . . *big* settling area and relatively small raking capacity. Rotating rakes in the bowl plow settled solids outward to a hopper which discharges into the classifier section . . . clarified effluent overflows a peripheral launder on the bowl. Below are some operating data from a recent Bowl Desiltor installation.



The DORRCO BOWL DESILTOR in operation

Pictured above is a Bowl Desiltor recovering saleable agstone from a stone washing operation at G. & W. H. Corson, Inc. near Philadelphia, Pennsylvania. The bowl is 26 ft. in dia. and the Classifier is a duplex model with 5 ft. wide by 30 ft. 4 in. long rakes. Feed averages 600 gpm containing 3-4% solids of which 95% is minus 100 mesh material and approximately 50% is minus 325 mesh. 88% of the plus 325 mesh material is recovered as a rake product containing 25% moisture. Average overall recovery is 55 to 60% amounting to 3 to 4 tons per hour.

If you have a washing operation and these results sound interesting, a Dorr engineer will gladly supply more information on the Bowl Desiltor.

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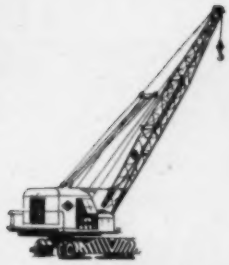

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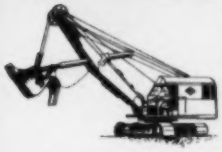
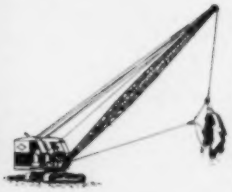


SHOVELS—Capacities from ¾-yd. to 6-yds.



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This new trademark is the symbol of a pool of engineering experience that has few rivals in American industry. This important basic resource is reinforced by increased manufacturing facilities, and an expanded organization to serve you.

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BALDWIN-LIMA-HAMILTON CORPORATION
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CLOSER TOLERANCES MAKE THE DIFFERENCE

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Wickwire Rope is available in all sizes and constructions, both regular lay and Wisscolay Preformed. See your nearest Wickwire distributor for the *right* rope for your particular needs. For your free copy of "Know Your Ropes," write to Wire Rope Sales Office, Wickwire Spencer Steel Division of C. F. & I., Palmer, Mass.

LOOK FOR THE YELLOW TRIANGLE ON THE REEL

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but more important, we want you to get the most out of them!

Our job doesn't start or end with selling screw conveyors. More important, our engineers work hand-in-hand with you—or with your consulting engineers... recommend the exact type of screw conveyor to fit your individual application.

Note these features: Link-Belt Screw Conveyors are simple and compact... have less wearing parts. They are precision-made to insure smooth operation and complete interchangeability of parts.

Further, these screw conveyors are available in a full range of diameters, gauges and pitches ... can be made of the metal most suited to your particular job. And Link-Belt can supply all of the components such as collars, couplings, hangers, troughs, box ends, flanges, thrusts, drives, etc. For full information write direct or contact your nearest Link-Belt representative.

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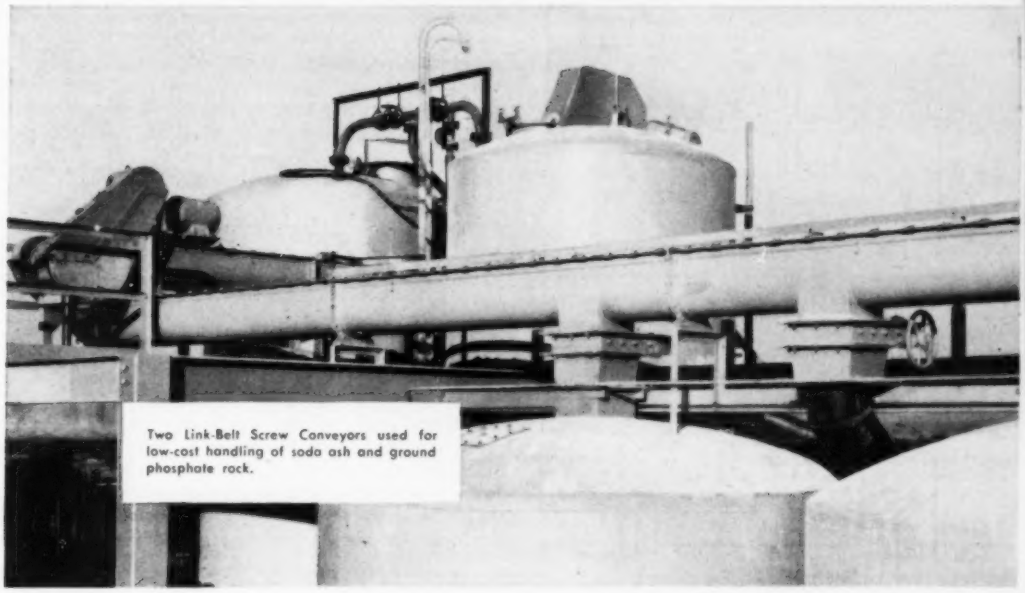

Two Link-Belt Screw Conveyors used for low-cost handling of soda ash and ground phosphate rock.

LINK-BELT

SCREW CONVEYORS

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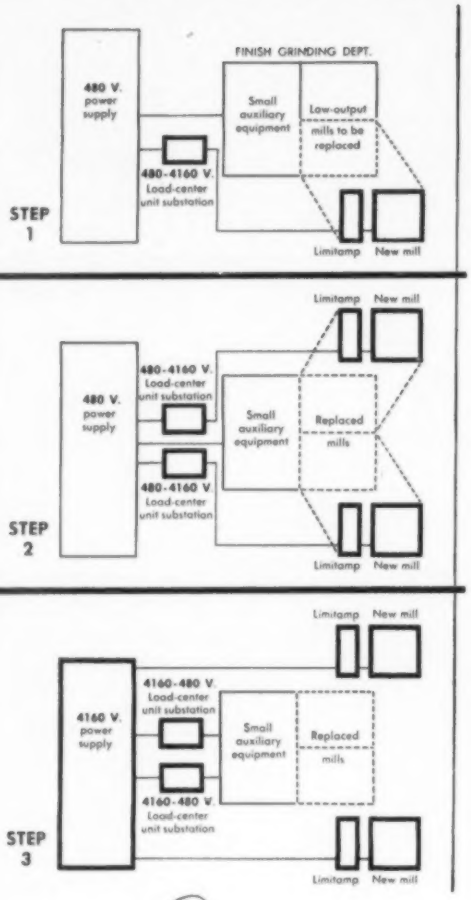
Now—MODERNIZE *without complete shutdown!*

CHANGE TO HIGH VOLTAGE—*step by step!*



Essential to cement-plant expansion tomorrow as well as today, electrical modernization calls for distributing power at high voltage direct to large equipment, and also to load-center unit substations where it is stepped down for small auxiliary equipment. For example, in finish grinding, here's one way many cement plants are modernizing with a minimum of production delay.

1. Replace a group of old, low-production, low-voltage mills with a new high-output mill driven by a high-voltage synchronous motor with limitamp control. Connect in reverse a load center unit substation so that the existing 480-volt supply is stepped *up* to 4160 volts for the new motor, placing the new mill in operation. The rest of the department continues to operate as before.

2. Similarly, other new high-voltage units are then added, one at a time. All equipment continues to operate from the 480-volt supply.

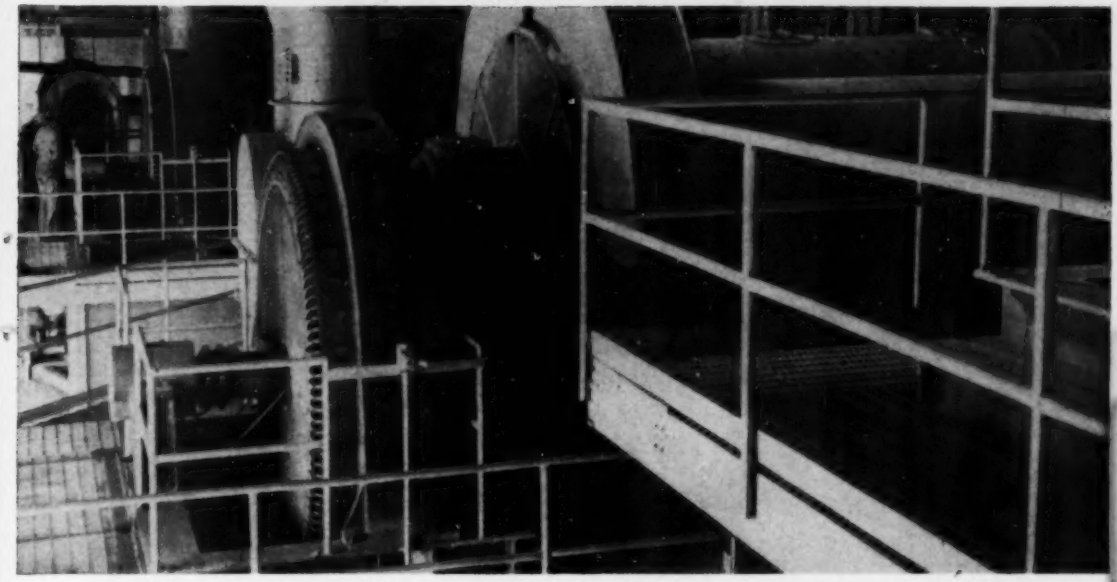
3. Replace low-voltage with high-voltage power supply by making the necessary changes at the main plant substation and in the distribution lines. (In some cases, generators used for local power will be rewound one at a time.) Connect the newly available high-voltage power direct to limitamp controllers and the high-output mills. Then reverse the load-center unit substations so that they now step *down* high-voltage to low-voltage power for small auxiliary equipment.

You can put your confidence in—

GENERAL ELECTRIC

658-5

ELECTRICALLY



Increased cement production is provided by replacing several small, low-output mills with one large modern mill driven by a G-E high-voltage synchronous motor. G-E synchronous motors, high in operating efficiency for driving constant-speed cement plant machinery, need only minimum maintenance, maintain exact speed, improve over-all plant power factor. The two G-E 1000-hp, 180 rpm, 4160-volt synchronous motors shown are driving clinker-pulverizing ball mills in the finishing department of a large Western cement plant, electrically modernized for greater output.

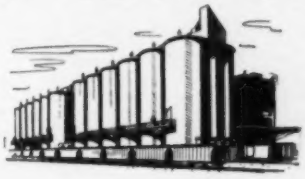
SIMPLIFY THE CHANGE—*with co-ordinated G-E units!*

Time-and-cost-saving way to bring in purchased power to your plant is through a G-E master unit substation. All components are fully co-ordinated and metal-enclosed for personnel protection. Their flexibility makes these compact, space-saving units applicable to practically any cement-plant arrangement. The G-E master unit substation shown is 3750 kva, 66,000-4160 volts.

Complete and easy to specify, G-E load-center unit substations are assembled and wired for quick, easy installation. Standardized "building-block" design permits lower unit cost plus flexibility of arrangement to simplify plant modernization. The 1000-kva G-E unit shown supplies power to auxiliary motors in the kiln department of an electrically modernized Eastern plant.

Effective centralized control of high-voltage motors—plus sure short-circuit protection—is provided by G-E limitamp controllers which receive power direct from a master unit substation. Co-ordinated components are factory-assembled in steel cubicles, save installation time and space. The units in this modern cement plant control 1000- and 500-hp 4160-volt synchronous motors.

NOW IS THE TIME—when you are in the planning stage for modernizing your cement plant—to call in a G-E specialist to study your plant's individual needs, help you develop a plan for purchasing and modernizing on an easy, step-by-step basis. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*



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PIT AND QUARRY

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B&W BABCOCK & WILCOX

C-191

editorial

Pit and Quarry's 35th Year

THIS year PIT AND QUARRY is 35 years old. It was in October, 1916, that producers of nonmetallic minerals received Volume I Number 1 of the first magazine to devote itself entirely to their interests. In the intervening years we have seen two world wars, economic booms and depressions, and other developments which have changed the course of history, but there has been no change in the fundamental aims of PIT AND QUARRY. The book has grown—physically, editorially, in circulation, in influence and prestige, in advertising volume and in other ways—along with the field it serves, but its creed remains basically as it was expressed editorially in that first issue.

This editorial stated that producers of nonmetallic minerals in the past found it necessary to be content with such space as was given them in journals impinging to a limited extent on their field. This was most unsatisfactory from the standpoint of the reader and the advertiser, until the time had arrived when, in the rapid growth of the industry, a publication like PIT AND QUARRY was absolutely demanded. The phenomenal increase in the use of concrete for all classes of construction had given a wonderful impetus to the business of the men who own and operate pits and quarries. It was pointed out, for example, that at the then existing rate of consumption of cement in this country, at least 60,000,000 cubic yards of aggregates must be produced annually for concrete work alone. The editorial further stated that PIT AND QUARRY was the response to the demand of this industry, its sole purpose being to give the men in the nonmetallic minerals industries a specialized publication, all of it devoted to their interests and taking up their problems in a detailed way which would not be possible for publications having other interests to serve; and to furnish to advertisers a direct medium for reaching these men without having to pay for a large amount of waste circulation.

FROM the start PIT AND QUARRY was dedicated to providing all types of information important or interesting to producers of nonmetallic minerals and to serving them in any other way possible. The first issue—October, 1916—was designated on the title page as "A Journal for Producers and Marketers of Sand, Gravel and Stone." Early in 1918 the field was expanded to include cement, gypsum, and lime, and soon afterward the remaining nonmetallic minerals were included, with the exception, as is still the case, of coal, oil, and building clay. So, almost from the start, PIT AND QUARRY has concentrated on the same industries as today, and their many varied interests.

PIT AND QUARRY came into the world as a pocket-size magazine and remained so for many years, first as a quarterly, then a bi-monthly, and then in January, 1918, as a monthly magazine. The pocket size was very popular, as subscribers could carry their copies around in their pockets to read whenever they had a few minutes to spare. Progress cannot be denied, however, and the growing volume of editorial matter to be published and the limitations of the small page for advertising purposes were responsible for a drastic change beginning with the July 7, 1926, issue which came out on an every-other-week basis and in the present larger size. In November, 1932, PIT AND QUARRY went back to the monthly basis and has stayed there ever since.

LIKE practically all trade and technical papers in those days, PIT AND QUARRY started out as a free distribution or controlled circulation magazine. However, when the trend turned very strongly toward paid circulation publications, PIT AND QUARRY went along. At the end of the first six months on this basis (ending June 30, 1929) the records showed a total net paid circulation of 3,702 plus unpaid distribution of 2,528 for a total circulation of 6,230. It was not long before the percentage of paid subscriptions was high enough to gain membership in the A.B.C. (Audit Bureau of Circulations).

These figures compare with those for the six months ending December 31, 1950, which show a total net paid circulation of 14,040 plus unpaid distribution of 998 for a total circulation of 15,038, the highest in PIT AND QUARRY's history. This has been a steady growth, with dips during periods of depression, and has closely paralleled the growth of the industries it covers, both in the volume and value of their production and in the number of plants in operation. Except for portland cement, there is no available information on the total volume of nonmetallic minerals produced in 1916, but the total output was valued at $729,000,000. Cement production was a record 91,521,198 bbls., valued at a little over $100,000,000. In 1929 portland cement production was 170,646,036 bbls., valued at $252,556,133; crushed stone production was about 91,000,000 tons, valued at $79,041,699. The total value of all nonmetallics was well over $1,000,000,000. Final figures for 1950 are not yet available, but our estimates indicate record cement production of about 226,000,000 bbls., valued at about $530,000,000; crushed stone production of about 234,000,000 tons, valued at $305,000,000; and sand and gravel production of about 345,000,000 tons, valued at $375,000,000. The total value of all nonmetallic minerals produced was about $2,300,000,000.

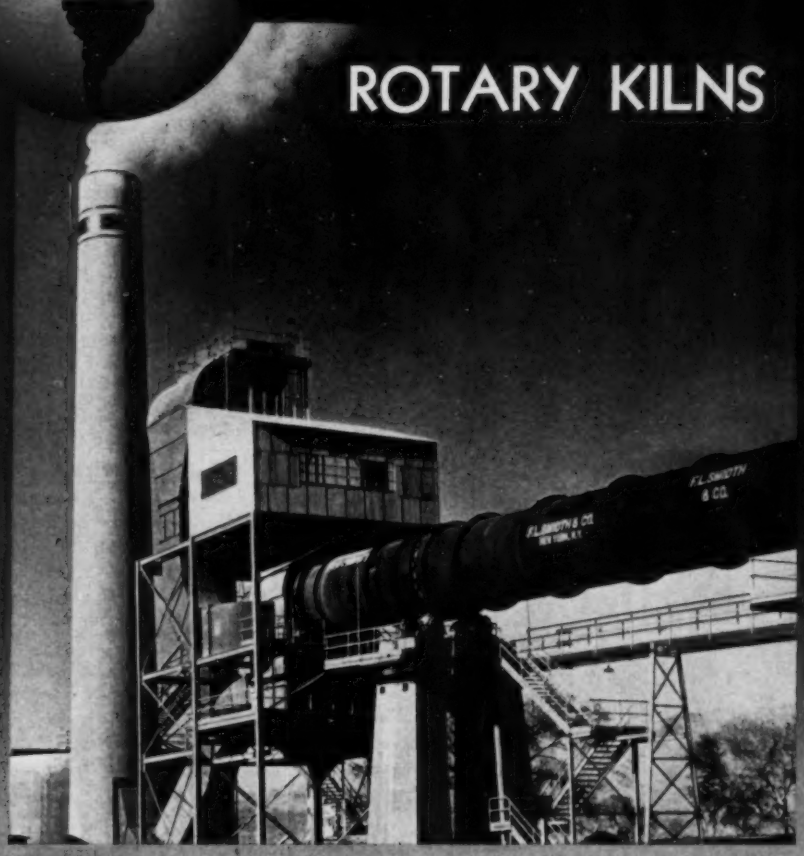
THEN, as now, one could find in any issue of PIT AND QUARRY news items and major articles about all of these industries. In Volume I Number 1, for example, there were: operating descriptions of two important new sand and gravel plants and a crushed stone plant; a description of the bookkeeping and record keeping procedures of a large producing company; articles on sand specifications, the origin of sand and gravel deposits, sidelines for aggregates producers, the advantages of motor trucks, the relative merits of weight and volume measurement of aggregates; other helpful articles; a report of the Cement Show; and all kinds of news.

Life in general has become more complex with the succeeding years and along with it the business of producing nonmetallic minerals and our job in covering important developments and providing useful information. As in the past, however, we will continue to serve these industries to the best of our ability.

Walter E. Trasoffer

SMIDTH

ROTARY KILNS



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news of the industry

PIT AND QUARRY

Carolina Giant, Lehigh Draft Large-Scale Plans To Expand in Southeast

Two large cement concerns are planning to effect a substantial expansion of production facilities in the Southeast this year. Lehigh Portland Cement Company and Carolina Giant Cement Company officials applied to the National Security Resources Board for certificates of necessity to cover new production in that region. The latter firm has received approval.

Lehigh proposes to build an $8,000,000 plant near Jacksonville, Fla., which would have a capacity of 1,400,000 bbls. per year. Construction would start as soon as possible after government approval. Carolina Giant, with N.S.R.B. approval, plans to increase its Harleyville, S. C., capacity from 800,000 bbls. to 1,800,000 bbls. a year.

Both applications are based upon the critical shortage of cement in the entire Southeast, a situation which is expected to become worse as demands of the South Carolina atomic energy project begin to mount. Initial reports indicate that this project will require 450,000 bbls. of cement for concrete pipe alone.

Carolina Giant has already ordered a 425-ft. kiln from F. L. Smidth & Company of New York. According to J. A. Philbrick, president, the new kiln will turn out 3,000 bbls. of cement clinker per day.

James Douglas Named To Important DMA Post

The appointment of James Douglas, deputy vice-chairman for metals and minerals of the War Production Board during World War II, as acting deputy administrator of the Defense Minerals Administration was recently announced by Secretary of the Interior Oscar L. Chapman.

Mr. Douglas will assist Defense Minerals Administrator James Boyd in the broad supervision of programs to assure an adequate supply of critical minerals for the defense effort and for the national economy. He performed similar duties while he was with the WPB. Since 1927, except for his years in government service, Mr. Douglas has been engaged continuously in mining and related industries as a mining engineer and in professional and consulting work. Some of his assignments took him to Rhodesia, the Union of South Africa, Mexico, South America, and Canada.

British Cement Industry Still Faces Nationalization

Limeographs reports that according to the British publication *Cement, Lime and Gravel*, the British labor government is still threatening to nationalize the country's cement industry.

In waging an all-out campaign against nationalization, British cement industry leaders contend that nothing can possibly be gained and that in every industry which has been nationalized in England thus far consumer costs have been increased for products or services.

High honors went to the Valley Dolomite Corporation, Bonne Terre, Mo., for having produced the highest quality of agricultural limestone in Missouri during 1950. The winning firm stood first among 328 companies.

Coming Events

March 19 and 20, 1951—Chicago. Annual convention, Wabash Valley Ready Mixed Concrete Association. Drake Hotel.

April 2-4, 1951 — Washington. Annual convention, Autoclave Building Products Association, Statler Hotel.

April 30-May 4, 1951 — Chicago. Materials Handling Conference and National Materials Handling Exposition. International Amphitheatre.

June 18-22, 1951 — Atlantic City. Annual meeting, American Society for Testing Materials. Chalfonte-Haddon Hall.

Universal Atlas Cement Acquires 680-Acre Site In Botetourt County, Va.

After two years of negotiations the Universal Atlas Cement Company recently completed arrangements for its acquisition of a 680-acre tract in Botetourt County, Va., where the firm plans eventually to erect a cement plant. Purchase of a 342-acre tract was the last step in a series of property deals which began in 1949. It was reported that the entire 680-acre tract in the Haymakertown section cost Universal a total of $161,500.

According to estimates of the limestone resources in this area now controlled by Universal and by the Lone Star Cement Corporation (west of Universal's holdings), the two concerns have access to reserves which will not run out in the next 100 years. Some estimates put the duration at 200 years.

Standard Lime & Stone Co. Wins Kiln Building Permit

The village of McCook, Ill., has been directed by Superior Court Judge John A. Sbarbaro to issue a building permit to the Standard Lime and Stone Company for the construction of an additional plant building to house a rotary kiln.

The company sued last month after the village labelled the plant a nuisance and withheld a permit, saying the plant polluted the air about it with limestone dust. Judge Sbarbaro overruled the village's claim to discretionary issuance of building permits, and said that operation of the proposed unit would create no nuisance. John C. Slade, attorney for the company, said that officials plan to construct devices to stop air pollution.

An expansion project costing $750,000 is under construction at the Alpha Portland Cement Co., Ironton, O. The project includes the erection of new silos, a new packing house, and new bag storage houses. John J. Davis, superintendent of the plant, expects completion about July 1 to increase production considerably.

'51 Construction Estimate Revised Upward by Dodge —Home Total Unchanged

F. W. Dodge's estimate of construction volume for 1951 as published in *Architectural Record* last November have been revised slightly upward as a result of recent developments in the defense mobilization program.

It is anticipated that the recently ordered restrictions on commercial building will be more than compensated by increases in manufacturing plant, power plant, direct military building, and civil defense construction. A total decline of 18 percent, as compared with the record-breaking construction volume of 1950, is now expected rather than the 19 percent decline previously forecast.

An optimistic view as to the status of the construction industry beyond 1951 is taken in the estimate. It suggests that 1951 may well prove to be a transition year towards the close of which the country will have geared itself into a defense economy that will be able to support increased construction volume in future years.

Concerning the order of January 13 restricting starts in commercial building, the Dodge opinion is that "the text of the order appears to permit hereafter either strict or liberal interpretation, in accordance with the exigencies of the material supply situation as they may develop."

The November estimate of 1951 residential building was not changed, and the analysts point to recent assurances by government authorities that they still plan to control non-farm housing units to a total of between 800,000 and 850,000 in 1951.

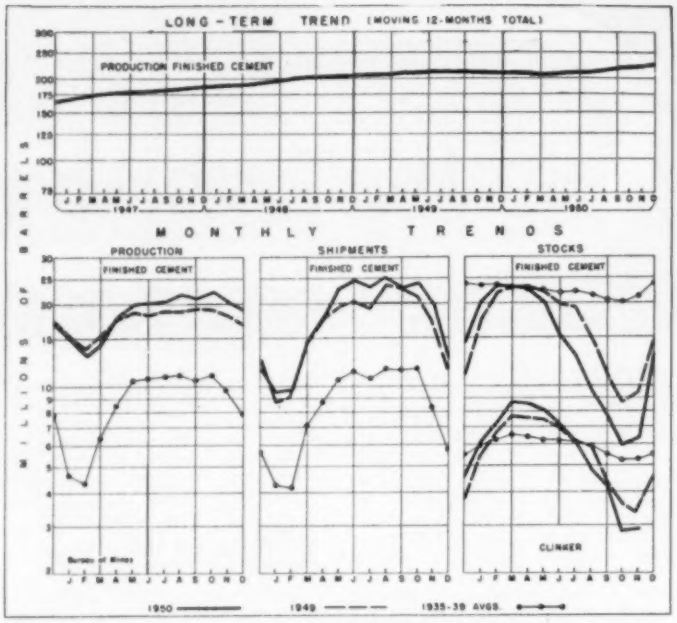
Canadian Firm Ups Output By Addition of Five Kilns

The Dominion Lime Company, Lime Ridge, Quebec, Canada, has placed three new Azbe kilns in operation. This raises the plant's capacity to 52,000 tons annually. The plant also operates five wood-burning kilns for the purpose of producing sulphur-free lime for steel-making operations.

According to J. A. Stewart, managing director of Dominion Lime, two additional Azbe kilns will soon be in operation. When these begin producing annual output will be increased to 85,000 tons.

Statisticians have found that Egypt ranks sixth among the world's phosphate producers, its output averaging 394,000 tons per year. Principal mining areas are in the Nile Valley, the Libyan Desert, and the Red Sea area. Reserves are estimated to total about 17,000,000 tons.

Discovery of new gypsum deposits covering more than 1,000,000 square yards has been announced in Germany. The beds are located between Foerste and Dorste in the North Rhine-Westphalia area.



SUMMARY—The portland cement industry produced 19,116,000 barrels of finished cement in December, 1950, as reported to the U.S. Bureau of Mines. This total is 13 percent greater than that reported in December of the previous year. Mill shipments totaled 12,477,000 barrels —7 percent above the December, 1949, figure, while stocks on December 31 were 11 percent below the corresponding period a year ago. Clinker output during the month amounted to 20,180,000 barrels—an increase of 10 percent over that for December, 1949.

PRODUCTION—The output of 19,116,000 barrels of finished cement in December, 1950, came from 150 plants located in 35 states and Puerto Rico. In the same month of 1949, 16,967,000 barrels were produced in 149 plants. Clinker production was up 10 percent over the December, 1949, total.

SHIPMENTS—Mill shipments of 12,477,000 barrels increased 7 percent over the total reported for December, 1949. The demand for cement, as indicated by mill shipments, declined from the previous month's (November, 1950) total of 19,791,000 barrels. Shipments were greater in 11 districts and smaller in 8 districts than those reported for December, 1949.

STOCKS—On December 31, stocks of finished cement amounted to 13,021,000 barrels—11 percent below the December, 1949, figure, while stocks of clinker were 4,012,000 barrels—13 percent below those of the same month in 1949.

New Perlite Plant to Tap Rich 5,000,000-Ton Deposit

A new perlite crushing plant, to be known as the Napa Perlite Company, is being built on the Spring Valley ranch of Fred Holt near St. Helena, Calif. A survey by mineral engineers has indicated that there are about 5,000,000 tons of perlite in the deposit on the property.

The mineral will be mined and crushed at the plant, now under construction, and then shipped out for final kiln processing. The organization is backed by McNeal and Connolly of San Francisco. About $25,000 has been invested in the plant to date. According to local reports, 2,000 tons of perlite have been mined in recent months and sent to a San Jose processing plant.

Calaveras Declares Dividend On Common—Gets Big Order

For the first time in the history of the Calaveras Cement Company a dividend was declared on the firm's common stock. The dividend was announced last December, simultaneously with the disclosure of the largest order ever received by Calaveras.

Directors declared a 25 percent cash dividend and a 10 percent stock dividend on common stock to holders of record December 19. The board cleared the way for the common dividend during 1950 by payment of accruals and retirement of prior preference shares at a cost of $208,000, according to President William Wallace Mein.

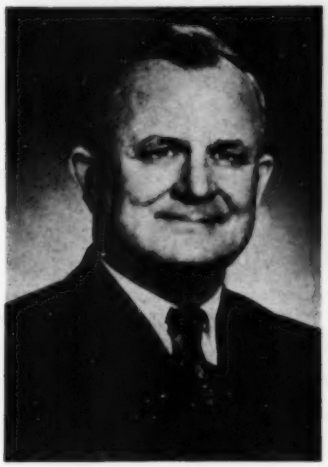
The record order, totalling 1,600,000 bbls. of cement, is earmarked for the construction of the Pine Flat Dam near Fresno, Calif.

25 Years of Building the West is the title of a booklet just released which tells the story of the company since the days of its organization up to its silver anniversary. Calaveras now has a yearly output of 2,500,000 bbls. of cement.

The Missouri Portland Cement Company of Kansas City, Mo., has sold a large storage yard on Meramec Street to the Murch-Jarvis Construction Company for approximately $72,000.

Roberts, Johnson Named To Highest Posts By Allis-Chalmers Board

W. A. Roberts, formerly executive vice-president of the Allis-Chalmers tractor division, has been elected president of the company, succeeding the late Walter Geist, according to an announcement made by the firm's board of directors. Mr. Roberts, who began his career with Allis-Chalmers in 1924 as a salesman for the Wichita, Kan., branch, became vice-president in charge of the tractor division in March, 1944. He was elected executive vice-president in charge of that division in 1947, and became a member of the board's executive committee in March, 1948.



W. A. Roberts

W. C. Johnson

W. C. Johnson, executive vice-president in charge of the general machinery division, was named executive vice-president for the entire company. Mr. Johnson joined the company in 1924 as a machinist's helper. He became vice-president of the general machinery division in 1944, division executive vice-president in 1947, and a director in 1948.

R. S. Stevenson, general sales manager of the tractor division, was named vice-president in charge of the tractor division. Mr. Stevenson, who succeeds Mr. Roberts as head of the tractor division, has been associated with the company since 1933. He became general sales manager of the tractor division last year.

Other new appointments include J. L. Singleton, vice-president in charge of the general machinery division; A. W. Van Hercke, vice-president in charge of tractor division manufacturing; and Fred Mackey, vice-president in charge of general machinery manufacturing.

Weaver Corporation Sells Two Quarries, Reorganizes

M. O. Weaver, Inc., Des Moines, Ia., which has operated quarries in Iowa and other states for several years, has been reorganized, according to E. W. Knapp, president.

Stone quarries at Alden, Ia., and a ready-mix concrete plant at Webster City are now owned by Wood W. Weaver and Robert R. Weaver of Iowa Falls, and operated under the name of Weaver Construction Co.

The stone quarry at Fayette will be owned by Paul Templeman of Fayette and operated under the name of the Fayette Stone Company.

Mr. Knapp will continue other quarry operations and bituminous paving contracting under the name of M. O. Weaver, Inc.

At Drogheda, Ireland, the big cement plant's daily output has now reached 1,000 tons. A plant at Limerick is producing more than 250 tons per day.

Cover Picture....

• Our cover picture this month is an unusual shot showing a part of the Henry J. Kaiser Company's Radum plant between Pleasanton and Livermore, Calif. A "Caterpillar" 8S bulldozer is seen reclaiming sand and gravel from the stockpile to the hopper feeding a tunnel conveyor. The plant, built in 1928-29, is still one of the largest and most modern sand-and-gravel operations in existence, having a capacity of about 1,000 tons per hr.

January Construction Up 43% Over Last January—Below December Total

Construction contract awards for January, 1951, in the 37 states east of the Rockies were down 11 percent from December but were still high enough to be 43 percent ahead of January, 1950, reports the F. W. Dodge Corporation. The January figure was $1,043,248,000.

Residential awards totaling $420,918,000 were down 12 percent from the December figure of $478,583,000, but were 23 percent ahead of January, 1950. Nonresidential contracts of $461,016,000 were 6 percent below December, but 96 percent above January of last year.

Public and private works and utilities totaled $161,314,000 in January, but 6 percent higher than in January, 1950.

Two U.S. Steel Subsidiaries Merge—Form One Operation

A merger of the Pittsburgh Limestone Corporation and the Michigan Limestone and Chemical Company, subsidiaries of the United States Steel Corporation, into one operating subsidiary was announced recently by the parent company.

According to an announcement released by Benjamin F. Fairless, president of U. S. Steel, the merger was undertaken to effect a simplification of the corporate structure within the parent organization.

Effective January 2 the merged company assumed the name of Michigan Limestone and Chemical Company. New executive offices for the merged concern will be established in Detroit, with Irvin L. Clymer, head of both subsidiaries, as president of the consolidated operation. District operating headquarters will be continued.

Northwest Gypsum Company To Mine 1,000,000-Ton Deposit

Northwest Gypsum Company will start mining operations soon in an estimated 1,000,000-ton deposit near Weiser, Idaho. The company was developed by Dr. F. M. Handy, Spokane nonmetallic mining engineer, with backers in Colfax. Spring production of gypsum fertilizers is planned, with wall board and cement material following.

An 8-mile $105,000 company road to the Union Pacific Railroad at Huntington Bridge is reported nearing completion.

Canadian Cement Concern Starts $2,000,000 Expansion

The British Columbia Cement Company has started a $2,000,000 expansion program at its Bamberton plant near Victoria, B. C. A new kiln, a slurry mixer, clinker storage facilities and necessary component equipment will be included.

The expansion program is expected to increase the capacity of the plant by 50 percent above the present output of 1,350,00 bbls., according to Nigel A. Tomlin, president. Completion will take about a year.

Sand and Gravel Output Of Canada Lower in '49 But Value Increased

According to the annual report of Canada's sand and gravel industry published by the Mining, Metallurgical and Chemical Section, Dominion Bureau of Statistics, for 1949, commercial production of sand and gravel during the year amounted to 63,356,308 short tons, valued at $31,181,541, as compared with 68,670,863 short tons, valued at $30,629,596 in 1948—a decrease of 7.8 percent in tonnage, but an increase of 1.8 percent in value. The totals included sand and gravel used by railroads as ballast, gravel used by mines as backfill, and recoveries of sand by dredges, as well as similar materials from other ources.

The sand and gravel output of Newfoundland was included in Canada's total for 1949. Ontario's production of 22,320,753 tons was 8.4 percent greater than that for the preceding year. There was less road construction in Quebec during 1949, which accounts for the 31.8 percent decrease in the use of sand and gravel in this province.

In 1949 the industry employed 3,863 persons, who received a total of $7,147,334 in salaries and wages. Imports of sand and gravel amounted to 171,165 tons, valued at $155,349 in 1949; exports were 337,134 tons worth $314,581.

Trinity Portland Cement Co. Opens Second Dallas Unit

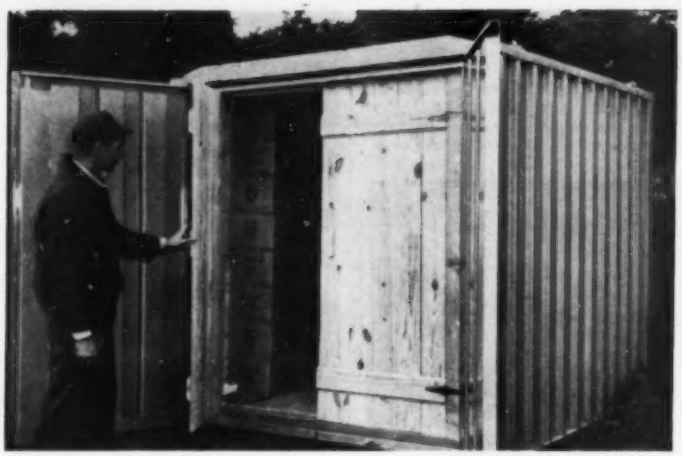
Trinity Portland Cement Company, a division of General Portland Cement of Chicago, has placed in operation its second manufacturing unit, integrated with an existing plant in West Dallas, Tex.

The new plant has an annual capacity of 1,250,000 bbls. and will approximately double the company's Dallas output. In 1949 General Portland's board of directors authorized the spending of $3,800,000 for the Dallas plant and improvements in other plants.

Present for the opening of the new plant were General's President Smith W. Storey and E. L. Gibson, vice-president in charge of engineering and operations. James F. Hayden is vice-president in charge of the Trinity Division, which also operates plants in Houston and Fort Worth.

According to Mr. Storey, the new facilities at Dallas, plus the additional expansion programs completed in Fort Worth and Houston since 1942, have boosted General's output for Texas by about 100 percent. Other General plants are located in Chattanooga, Tenn., and Tampa, Fla.

The Hildebrand Quarries Company, Astoria, Ore., has acquired a new quarry site near Vernonia, Ore., the firm's third. Other quarries worked are located in Clatsop County and in the Olney area. According to Arthur Hildebrand, president, quarrying equipment will be moved from one site to another as required to fill orders for crushed rock.



• Dynamite and valuable tools are being stored on the job by the Hunkin-Conkey Construction Company in work on the Pennsylvania Turnpike near Pittsburgh, Pa. Three "Transportainers", welded steel shipping containers of 275-cu. ft. (6-ton) capacity, made by the Dravo Corporation, are used for this purpose. For safety in explosives storage, the containers have been lined with one-inch sheathing lumber to minimize spark danger from metallic objects contacting the sides or floor. The units are weatherproof, pilferproof, and are portable by truck, crane, or tractor. Savings in time as well as in purchases of larger quantities of explosives has resulted from the use of the containers.

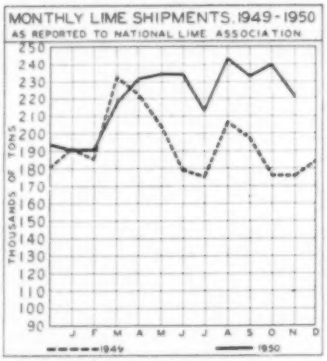
Potash Company of America Plans $1,000,000 Expansion

The Potash Company of America is planning to spend more than $1,000,000 in 1951, according to G. F. Coope, president of the Carlsbad, N. M., firm.

Most of the money will be spent on the firm's first expansion beyond the Carlsbad area, a new plant at Dumas, Tex., north of Amarillo. By treating muriate of potash with sulphuric acid hydrochloric acid and potassium sulphate will be produced at Dumas.

A new 24-kw. diesel unit is being installed to add 3,200 hp. to the Carlsbad power plant, and improvements are being added to the flotation plant to increase the proportion of ore recovery. The company is also sinking a third shaft 1,000 ft. to the working levels at Carlsbad, freezing the ground to combat quicksand.

The demand for potash fertilizer continues to rise, and Mr. Coope stated that he believes it will continue to rise in spite of substantial imports from France, Spain, and the Allied Zone of Germany.



According to data collected by the National Lime Association, 47 companies in November, 1950, shipped 221,014 tons of lime (141,102 quicklime; 49,912 hydrate). Reporting companies represent 59.7 percent of the association members' total capacity of record. Based on Pit and Quarry's estimate for the remainder of the industry, the total shipments were approximately 407,000 tons. Shipments by uses and grades for November, 1950, were:

	Quicklime	Hydrate
Agricultural	1,831	5,852
Building	16,130	45,490
Chemical	123,141	28,570
Totals	141,102	79,912

Government to Reactivate New England Magnesium Plants

New England Lime Company, Adams, Mass., has been notified that the company's two magnesium plants, located at Canaan, Conn., and Wingdale, N. Y., are to be reopened soon by the government as a part of the defense effort.

The company will operate the plants as in the past, although definite arrangements are not complete, according to C. C. Loomis, president.

Production and sales of asbestos-cement products were higher in 1950 than for any previous year, according to Chester C. Kelsey, manager of the Asbestos-Cement Products Association. He stated that there appears to be little likelihood of a shortage in 1951, even though certain types of asbestos fiber are on the government list of scarce minerals.

• Witnessing the loading of the 1,000,000th barrel of Shell Brand Cement produced by the Halliburton Portland Cement Company are (left to right) Marshall Clements, sales manager; A. J. (Andy) Anderson, works manager; and Ellroy King, vice-president. The brief ceremony (on January 22) also marked the tenth month of operation of this revolutionary Corpus Christi plant, which is raw-grinding oyster shells for wet processing in a closed circuit system employing rake and bowl classifiers.

Indiana Producers Willing To Aid in Financing Survey of Resources

Leaders of the Indiana gravel, clay and coal industries have indicated that they are willing to "chip in" and help finance a geologic survey made by the Geology Division of the Indiana State Department of Conservation, according to Representative Lothair Teetor of Hagerstown, Ind. As a result, Mr. Teetor apparently will not press his earlier suggestion for the imposition of a severance tax on gravel, clay, and coal, as a means of raising revenue to finance the survey.

Spokesmen for the three industries testified at a recent hearing that the survey was aiding their industries and saving them thousands of dollars a year.

Lehigh Portland Cement Company's Iola, Kan., plant recently received a Distinguished Service Award from the State of Kansas through the Kansas Industrial Development Commission. R. E. Jones, plant manager at Iola, accepted the award from Director Maurice E. Fager of the commission.

S. H. Williston to Head Supply Division of DMA

Samuel H. Williston, mining company executive of Los Altos, California, has been appointed director of the supply division of the Defense Minerals Administration.

Mr. Williston, a member of the National Minerals Advisory Council to the Department of Interior since 1947, will recommend needed conservation and limitation regulations in order to divert the flow of crude and intermediate mineral products to meet defense and essential civilian needs. With assistance from the Bureau of Mines and the Geological Survey, he will analyze and maintain forecasts of total supplies of all critical metals and minerals.

Volunteer Portland Cement Expanding at Knoxville

Construction under way at the plant of the Volunteer Portland Cement Company, Knoxville, Tenn., will cost $133,000 according to a building permit the company obtained from the local county building commissioner.

The structures will include a storage building and additions to the kiln building and the mill.

"How It Happened" Told To Warn Lehigh Employees

In its unceasing fight against accidents, the Lehigh Portland Cement Company's staff in a recent issue of the *Lehigh News Conveyor* published the gruesome details of typical (and actual) mishaps under the heading "How Lehigh Employees Were Injured." This column may not provide pleasant reading, but it hammers home to the persons most concerned, Lehigh workers, the importance of avoiding carelessness.

Safety Consciousness — An Evaluation

By STANLEY WALKER
U. S. Bureau of Mines

(Because the staff of *Limeographs* considers safety consciousness an "important principle that lime plant management should consider in combating successfully the accident menace," the following abstract from a paper by Stanley Walker of the U. S. Bureau of Mines was published in a recent issue. Mr. Walker delivered the address at the fall meeting of the National Safety Congress in Chicago.)

"Safety consciousness is not a constant for which a specific value can be assigned, but is a variable, which is frequently intangible. Its evaluation is not simple.

"We all know that safety consciousness is the most potent factor in preventing accidents. Safety consciousness may be defined as awareness of hazard and alertness to danger, which controls every action of an individual through his desire to remain alive and uninjured.

"It is firmly believed by many that at least 80 or possibly even 90 percent of all injuries can be traced to someone's lack of safety consciousness, usually but not always the injured person. If this is true, the frequency of injuries is a good indicator of the safety consciousness of the workers involved.

"Although the safety consciousness of workers may be reasonably evaluated by the frequency of their injuries, we are specifically interested in finding out why some are safety conscious and others are not. Worthy of investigation is the fact that workers at two comparable plants in the same area show wide divergence in the frequency of injuries. Is there a relationship between the safety consciousness of direct supervisors and workers, and top management and workers? If a definite relationship does exist, an attempt should be made to find a yardstick to measure safety consciousness and to determine how it can best be used to benefit the relationships and protect the worker from injury.

"The theory is further developed that top management is responsible for safety, and safety consciousness must be comprehensive and vigorously active if injuries to workers are to be avoided. The behavior pattern of workers depends upon the expression of safety consciousness by their supervisor, and a definite relationship does exist.

"A study of 62 companies (including cement and lime plants) in 10 states permits the following summary to be drawn:

"Few men are inherently safety conscious.

"The behavior pattern of the safe worker is merely safety consciousness in practice.

"If safety consciousness is not inherent, it must be derived from others; normally these others are the workers' supervisors.

"The supervisors, in turn, look upward for their model of vigorous and comprehensive safety consciousness.

"If the worker is to avoid injury, *top officials* must personally point the way. You can't buy safety, and lip-service to safety doesn't prevent injuries.

"To join the 1,000-day club, safety consciousness must be actively functioning from the highest ranking official to the least skilled worker on the payroll, every day in the year, and every hour of the day."

U. S. Minerals Valued At $11,700,000 in '50—11 Percent Gain over '49

The value of mineral production in the United States in 1950 increased 11 percent over 1949 and totaled $11,700,000,000. The comparable value for 1949 was $10,600,000,000 and for the record year 1948, $12,300,000,000 (revised figures).

Although the huge value reflects a continuation of high prices, the quantity of minerals produced was 10 percent greater than in 1949 and only 4 percent less than the all-time peak in 1948.

The quantity and value of mineral fuels produced in 1950, as a group, were 10 percent greater than in 1949. Output of natural gas and natural-gas liquids set new records, and the petroleum pumped in 1950 was only 2 percent less than the 2,000,000,000 barrel record of 1948. Bituminous coal production was 16 percent higher than in 1949 but still 20 percent under the 630,000,000-ton record of 1947. Anthracite output increased slightly to over 44,000,000 tons. The fuels, valued at $8,700,000,000, accounted for three-fourths of the total value of all minerals produced in the United States in 1950.

Nonmetallic minerals (other than fuels) produced in 1950 increased 6 percent in physical volume and 8 percent in total value over 1949. The value in 1950 was estimated at $1,700,000,000, as compared with $1,600,000,000 a year earlier. Many construction materials set new records, the most prominent of which were cement, gypsum, stone, and sand and gravel. The fertilizers, phosphate rock and potash, also established new records, as did the chemical raw materials, sulphur and barite.

The 1950 output of virtually all metals increased, and collectively the physical volume was about 14 percent greater than in 1949. The total value jumped 30 percent in 1950 to $1,300,000,000.

With few exceptions, the demand for nonmetallic minerals was greater in 1950 than in 1949. Nonmetallic minerals (other than fuels) were valued at $1,700,000,000 in 1950, as compared with $1,600,000,000 annually in 1949 and 1948.

Owing to the general boom in construction, records were established in the production of several building materials. Cement shipments from mills rose from 207,000,000 barrels in 1949 to a record 230,000,000 barrels in 1950. Record outputs were also established in the sand-and-gravel and stone industries. Domestic production of crude gypsum increased from 6,600,000 short tons in 1949 to about 8,000,000 tons in 1950, a new high. Other building materials, such as lightweight aggregates and clays used in heavy clay products and refractories, also showed substantial increases in output.

Significant gains were recorded for both phosphate rock and potash in 1950 over 1949. Phosphate rock increased from 9,000,000 long tons to a new record of about 9,800,000 tons. The output of potash salts, in terms of K_2O, increased from 1,100,000 short tons in 1949 to approximately 1,200,000 tons, a new high in 1950. Extensions in production facilities were undertaken by established potash companies, and at least two new concerns were preparing to enter this field.

Native sulphur output reached a new record of about 5,200,000 long tons, but despite this production rate, a serious shortage developed in the latter part of the year. Production and imports of fluorspar were higher than in 1949 and consumption was at a record level. Principally owing to work stoppages in the soda ash industry, there was a small decline in total production of salt in the continental United States—from 15,600,000 short tons in 1949 to about 15,100,000 tons in 1950. The demand for other chemical raw materials such as barite, lithium minerals, bromine, borax, and lime resulted in an upward production trend.

Production of asbestos in the United States increased somewhat during 1950, but domestic output is small compared with requirements. The supply situation improved owing to increased imports, but demand still exceeded the supply. The availability of foreign kyanite improved during 1950, and some progress was reported in the development of domestic sources as well as the production of synthetic substitutes. Comparatively little sheet mica was produced in the United States in 1950, but interest in possible stimulation programs became active after the beginning of hostilities in Korea. Monazite became increasingly difficult to obtain, owing to restrictions on exports imposed by foreign countries. Output is increasing somewhat in the United States, and a great deal of interest has developed in new sources of rare earths, such as bastnasite. With improved operations in the ceramics industry, feldspar sales increased during the year. Helium shipments, estimated at 82,000,000 cubic feet in 1950, were 30,000,000 cubic feet greater than in 1949. Increased helium requirements for national defense necessitated the operation of a second helium plant in the latter part of 1950.

Arkansas High Court Rules In Mineral Lease Dispute

An opinion handed down by the Arkansas Supreme Court held that persons or firms holding mineral leases to state-owned lands are obliged to develop the property.

Affirming an Ouachita County Chancery Court decision, the high court's ruling was given in a case involving J. W. Sanders, who leased certain Ouachita County sand-and-gravel deposits from the state in 1944. In 1947 Sanders was requested by the state to add 80 acres of additional deposits to the land he was working.

In 1948 State Revenue Commissioner Otho A. Cook found that Sanders was not developing the tract, so he leased the 80 acres to other persons. When Dean Morley became state revenue commissioner, he held that the Sanders lease had been erroneously canceled, and restored Mr. Sander's rights to the land.

The State Supreme Court held that Commissioner Cook acted within his authority in canceling the lease in 1948. Chief Justice Smith dissented from the majority opinion, and contended that the state had a right to acquiesce in Sanders' inactivity, since the original purpose of the lease was conservation of mineral resources.

• This portrait of the late Walter Geist unfortunately arrived too late to be published in February with our notice of Mr. Geist's untimely death. President of the Allis-Chalmers Manufacturing Company since 1942, and associated with the firm since 1909, Mr. Geist was the victim of a heart attack on January 29. He was famed for having developed the multiple V-belt Texrope drive and rose to the presidency through a succession of promotions in executive posts.

Ideal Cement Co. Honored For Excellence in Management

The Ideal Cement Company, Denver, Colo., was awarded a "Certificate of Management Excellence" for 1950 by the American Institute of Management.

Awards are based on a study of more than 2,000 firms and are designed to provide a basis for research in corporate policies and procedures.

Tennessee's Gov. Browning Asks Mineral Severance Tax

Imposition of a Tennessee severance tax on timber and mineral deposits has been proposed by Governor Browning.

The governor did not immediately disclose the rate he would seek for the severance tax—a levy aimed at compensating the state for the loss of timber and minerals taken from the ground. He said he would attempt to obtain about $100,000 a year from such a tax.

Townsend Brothers Quarry, nine miles southeast of Tipton, Ia., has been purchased by Bernard Kotz and Paul Sindt.

Limestone Mines Seen As Possible Shelters For Louisville, K. C. Areas

Two cities may have solved the "A"-bomb jitters by planning to use extensive limestone mines in the event of a bomb attack. Louisville, Ky., has the best spot, as the mine of the Louisville Crushed Stone Company is in that city. The mine is more than 50 ft. below the surface and has 6 miles of tunnels—enough for the entire town to duck into. City officials are delighted with the find and are considering storing some of the city records there.

North Kansas City has a limestone mine 5 miles east of town, the property of the Midwest Pre-Cote Company. The cavern penetrates a bluff and goes down 70 ft. below the surface. The mine has an interior area of 3,000 sq. ft. and can hold approximately 20,000 persons in case of a bomb attack. Details of placing 6⅔ persons within a square foot are not given. Possibly a military secret.

Wholesale Cement Prices Boosted by Most Producers

Wholesale cement price increase of 10 cents a barrel in bulk and 13 cents a barrel in bags by the leading producers of cement became effective on January 1.

Industry spokesmen stated that the higher prices were made necessary by increased cost of raw materials, coal, and paper bags, plus wage increases that average 8 cents an hour and new pension plans which have been set up.

Among the companies raising prices were Universal-Atlas Cement Company, Alpha Portland Cement Company, Lehigh Portland Cement Company, Hercules Cement Corporation, Lone Star Cement Corporation, Giant Portland Cement Company, and Whitehall Cement Manufacturing Company.

Work Session Set for May 8-9 By Industrial Safety Group

Members of the Coordinating Committee of the President's Conference on Industrial Safety at their meeting last November in the U. S. Department of Labor Building, Washington, D. C., set May 8 and 9 as the dates for a work session of technical committees.

The May meeting will be held to appraise accomplishments made during 1950 and to take inventory of safety progress nationally and through the Governors' Conferences held since the organization of the President's Conference in 1949.

Monolith to Hike Output To 3 Million Bbls. Annually

In an address delivered recently at Bakersfield, Calif., by Bert Oberg, superintendent of the Monolith Portland Cement Company's plant at Monolith, Calif., it was disclosed that the firm will push up its production to 3,000,000 bbls. in 1951 to meet defense needs.

Mr. Oberg stated that Monolith produced 2,750,000 bbls. in 1950, and that its facilities would be further expanded during the coming year. The plant was acquired by the firm in 1920.

Supplies of limestone, said Mr. Oberg, are not likely to run out—the local deposits being estimated to hold enough raw material to last 900 years. The $16,000,000 plant is operated on a 24-hour basis seven days a week.

Graves, Benson Appointed To New Executive Posts

Two changes in top posts of the General Crushed Stone Company's staff at Easton, Pa., were recently announced by officials of the concern. Oscar E. Benson became president on February 13, succeeding Otho M. Graves, president since 1931. Mr. Graves is now chairman of the board of directors, replacing John Rice Sr., who has been named honorary chairman.

Otho M. Graves

Mr. Graves has been associated with General Crushed Stone since 1918, when he became assistant to the president after resigning as professor of graphics at Lafayette College. In 1927 he was named vice-president and general manager. Four years later he was elected to succeed Mr. Rice as president of the firm. He is an auhority on seismographic testing in quarry blasting, and is a consultant to the United States Bureau of Mines.

Oscar E. Benson

Active in organizations serving the nonmetallic minerals industries, Mr. Graves was president of the National Crushed Stone Association for four years and has been a director of the National Association of Manufacturers. He is a member of the National Safety Council and of the executive committee of its cement and quarry section.

Mr. Benson joined General Crushed Stone as assistant to the president in June, 1947, and in the same year he was made vice-president. Previously he had been manager of the Easton division of the Metropolitan Edison Company.

Mr. Rice's association with the company began in 1899, when with the late Harry H. Mitchell and Professor J. M. Porter he founded the General Crushed Stone Company. He was the firm's first vice-president; and in 1904 he became president, a post which he held until 1931. John Rice Jr. is now vice-president of the company, and Redington Moore is secretary-treasurer.

Pit and Quarry urges its readers to respond generously to the annual appeal of the American Red Cross, which is currently putting on its 1951 fund campaign under the slogan "Mobilize for Mercy."

This year the Red Cross has been asked to add the following activities to its regular program: a blood program for the armed forces, first aid training of 20,000,000 persons, and the revival of nurse's aid and home nursing training. Every thoughtful American will realize that his or her support is needed if the Red Cross is to carry out its many-faceted agenda this year.

The discovery of large deposits of vermiculite near Perth, Ontario, has aroused the interest of the United States Navy. Although the mineral is used principally for insulating materials, the Navy's interest in the mineral stems from its fireproof characteristics when used as a coating for decks and roofs.

As announced in the February issue of the Missouri Limestone Producers Association's *News Letter*, the annual meeting of the association will be held March 28 and 29 at the Hotel Governor, Jefferson City.

Industrial Mobilization Keynotes 32nd Annual Meeting of A.E.D.

THE challenge posed to the construction machinery industry by the nation's mobilization effort was the theme of the Associated Equipment Distributors 32nd annual meeting January 28 through February 1 at the Stevens Hotel in Chicago.

R. L. Arnold, Arnold Machinery Company, Inc., Salt Lake City, Utah, was elected international president, to succeed C. F. Halladay of Sioux Falls, S. D. Mr. Arnold, who served as A.E.D. vice-president in 1948 and 1949 and as executive vice-president in 1950, has been a member of the construction equipment industry for over 20 years.

Other 1951 officers elected to lead the association during the coming year were as follows: executive vice-president, H. J. Hush, Griffin Equipment Corporation, New York City; vice-presidents—J. A. Benson, Benson Tractor Company, Houston, Tex.; S. John Oechsle, Metalweld, Inc., Philadelphia, Pa., and S. A. Stephens Jr., F. H. Hopkins & Company, Limited, Montreal, Canada; and treasurer, E. J. Crosby, Hedge & Mattheis, South Boston, Mass.

The role of the distributor in a controlled economy and the security of our country were given careful attention by the record-breaking attendance of over 2,000 distributor and manufacturer members. Distributor and manufacturer panels stressed the need for better management of members' business.

The convention program officially opened on January 29, with the presidential address of C. F. Halladay, retiring president. Mr. Halladay set the tone and emphasis of this year's meeting when he stated: "As a nation, we are again at war, with our soldiers again fighting on foreign soil. As businessmen, we again find ourselves mobilizing industrially—working to establish ourselves in a controlled economy and to adjust our businesses to face whatever demands may be made upon us in the months ahead."

Mr. Halladay announced the appointment of John H. Randle as traveling field secretary. Mr. Randle's function will be to establish greater contact and liaison between individual members of the association and the executive office.

At the opening session a resolution was passed which put the association on record as being "opposed to public construction by force account." It was further recommended that the contract method be employed on all construction by the federal government and all other governmental bodies. Another resolution urging Congress to practice "every possible economy in its domestic expenditures and (to) eliminate all unnecessary programs" received overwhelming endorsement at the convention.

The second business session convened at 2:30 p.m. Monday afternoon with R. L. Arnold, 1951 international president, presiding. Mr. Arnold acted as moderator for a seven-man panel which considered the problems incident to a distributor's business.

Larry Carton, Gardner, Carton & Douglas, Chicago, Ill., took the floor first to explain the price and wage freeze as it relates to members of the construction industry. Beal Shaw, Shaw Sales & Service Company, Los Angeles, Calif., led a discussion of parts inventory. Walter Kershaw, Robison-Kershaw Company, Salt Lake City, Utah, outlined the factors governing distributors' financing and credit problems. One of the keys to this problem, it was agreed, was the necessity of securing an adequate down payment from the customer on the machinery.

Herman M. Brown, the Herman M. Brown Company, Des Moines, Ia., reviewed the merits and hazards of rental purchase plans. H. D. Anderson, Rish Equipment Company, Bluefield, W.Va., discussed "free service" and how the distributor can cut down his service overhead. Mr. Anderson emphasized the necessity of better delivery as being an essential in cutting this overhead.

L. G. Harrod, Harrod Equipment Company, Syracuse, N. Y., whose observations on co-operative manufacturer-distributor advertising were very well received, was the last speaker on the panel.

Tuesday, January 30, was "Meet Your Manufacturer Day." No business sessions were scheduled on this day, since individual contacts between distributor and manufacturer members was the main order of business for the day.

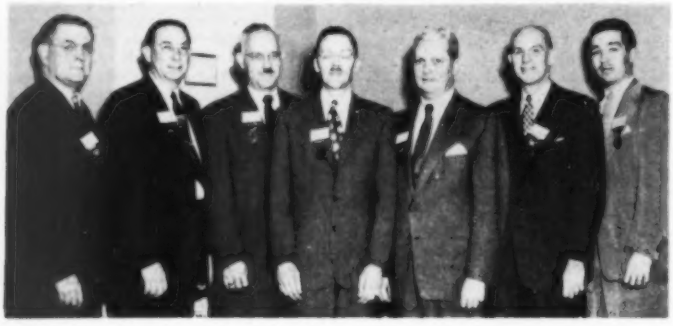
Wednesday morning's program opened with the election of 1951 officers. The following speakers were heard: Lt. Gen. Eugene Reybold, executive vice-president of the American Road Builders' Association; Arthur J. Hamer, Olson, Hamer and Company, Chicago, Ill.; Col. Robert G. Lovett, assistant chief, Engineers for Military Supply & Procurement; Capt. E. L. Hanson, assistant chief for business management of the Navy Bureau of Yards and Docks; and Ralph L. Schiesswohl, chief of the construction machinery section, machinery division, National Production Authority.

President elect of A.E.D. for 1951, R. L. Arnold, president of Arnold Machinery Co., Salt Lake City, Utah.

The official business portion of the 1951 convention program was concluded on Thursday morning, February 1, with an outstanding open forum panel composed of six leading distributors and six leading manufacturers of construction equipment. Sponsored by the association's manufacturer members, this session was devoted to informal discussion of more than a score of key problems affecting development and retention of markets for construction equipment.

Kenneth Lindsay, Iowa Manufacturing Company, Cedar Rapids, Ia., served as chairman of this meeting, while Tom-Callaway, Goodyear Tire & Rubber Co., Chicago, Ill., acted as moderator. Manufacturer participants included William Holland, International Harvester Company, Chicago, Ill.; G. H. Olson, Link

• Left to right: E. J. Crosby, treasurer; S. John Oechsle, vice-president; J. A. Benson, vice-president; R. L. Arnold, president; H. J. Hush, executive vice-president; S. A. Stephens Jr., vice-president; P. D. Hermann, executive secretary.



Belt Speeder Corporation, Cedar Rapids, Ia.; J. R. Steelman and L. J. Thelen, the Koehring Company, Milwaukee, Wis.; C. J. Haring, J. D. Adams Manufacturing Company, Indianapolis, Ind.; and E. B. Hill, Gar Wood Industries, Wayne, Mich.

The following distributor members took part in the panel discussion: R. L. Arnold, Arnold Machinery Company, Salt Lake City, Utah; R. J. Finn, Bode-Finn Equipment Company, Cincinnati, O.; P. A. Dufford, Intermountain Equipment Company, Boise, Idaho; Alex Kostyzak, Smith, Booth, Usher Company, Los Angeles, Calif.; Frank Skidmore, Contractors Equipment & Supply Company, Albuquerque, N. M.; Charles Hollingsworth, Dravo-Doyle Company, Pittsburgh, Pa.; and H. R. Lunn, The Boardman Company, Oklahoma City, Okla.

Among the entertainment highlights which were featured on the four-day program were the 32nd annual birthday party, honoring the outgoing president, and an Early Birds' Breakfast, also given in his honor by distributor members from his region (Minnesota, North Dakota, and South Dakota). Luncheons on Monday and Thursday were addressed by two famous speakers, Edward McFaul and Maj. Alexander P. de Seversky. The installation luncheon on January 31 saw 1951 officers and directors take office for the coming year. A special program was also arranged during the convention week for more than 300 ladies in attendance.

Cement Concerns Show Gains In Sales, Profits in 1950

Reports for the year ending December 31, 1950, show the General Portland Cement Company had a net profit (after taxes) of $5,907,700. Divided among 1,039,971 capital shares, this amounts to $5.68 earned per share. In 1949 the net profit was $5,239,900 or $5.05 per share.

The Lone Star Cement Corporation reported sales amounting to $64,402,962 and a net profit of $9,935,521 for 1950. This is equal to $10.47 a share on 948,597 shares outstanding. In 1949 sales were valued at $63,959,442; profit, $9,807,603. Keystone Portland Cement netted sales of $5,601,567 and a net income of $906,867 in 1950, as compared with net sales of $5,084,303 and income of $970,992 for 1949.

In 1949 the Canada Cement Co., Ltd., reported a net profit of $4,820,196; last year the figure stood at $5,206,516.

More than 300 workers employed by firms belonging to the Rock, Sand, and Gravel Association of San Diego County in California have been granted wage increases of 10 cents an hour.

Production of cement in Guatemala increased in 1950 to a point which takes care of all domestic needs, and the possibility of exporting surplus production is now being considered.

• A model 300 Manitowoc shovel loads a Koehring Dumptor along 2.22 miles of regrading and paving on the Columbia River Highway east of The Dalles, Ore., a project being handled by the Newport Construction Co. and Kern & Kibbe. Two Murphy diesel engines pulled a 200-kw. GE generator to drive a 30- by 42-in. Pioneer jaw crusher, a 40- by 42-in. Pioneer roll crusher, a 30- by 18-in. Austin Western roll crusher, and a 3-ft. Taylor gyratory crusher. Screens were 4- by 12-ft. Telsmiths. Completed June 24, 1950, this Oregon State Highway Department project required 27,000 cu. yds. of crushed rock and 350 tons of asphalt.

Increased Earnings Shown By Freeport Sulphur Co.

President Langbourne M. Williams Jr. of the Freeport Sulphur Company recently announced that consolidated net earnings of the company in 1950 after all charges including taxes, depletion, and depreciation amounted to $6,768,739. This is equivalent to $8.46 per share on the 800,000 shares of common stock outstanding. Earnings in 1949 were $5,902,314 or $7.38 per share. The 97th consecutive quarterly dividend was declared at the same time by the directors.

30 years ago in Pit and Quarry

THE feature of the March, 1921, issue of PIT AND QUARRY was the fourth annual convention of the National Crushed Stone Association, held February 7, 8 and 9 at Toronto, Ont. This meeting had a registered attendance of 109, including manufacturers' representatives and a large percentage of Canadians. Time has certainly taken its toll of this group, as the writer recognized only ten names as still among the living and only three or four as still active in the industry. The chief subjects of discussion at this convention were the proposed freight rate increase which seemed certain to be approved, and the car shortage. One of the speakers told how Canadian producers met a similar situation and averted a 40 percent rate increase. Before their case was presented to the Dominion Railway Commission, all pertinent facts and figures were obtained and set forth in a clear, concise manner. Their success was also due in part to the testimony of provincial and county highway officials, who stated that, if freight rates were raised, they would cease buying stone and open local quarries.

A program feature of the convention was to have been an analysis of production costs based on questionnaires sent to members. Comparatively few replied and their figures showed that few knew their actual production costs.

Many producers complained that although they were making little if any profit on sales at current prices, customers expected even further reductions. They were advised to show their customers actual cost figures and to point out that during the war the price of stone was never raised in proportion to other commodities and therefore could not be lowered.

There were a number of good operating articles in that issue, including two by assistant editor Daniel J. Hauer. One was entitled *Belt Conveyors for Storing Materials* and the other *Are Your Cars Loaded to Capacity*. An analysis of the Bureau of Mines accident report for 1919 showed that 1.93 men were killed and 144.2 were injured out of every 1,000 workers in quarries. This was a substantial decrease from 1918, but compares very unfavorably with current accident rates. A review of the talc industry in 1920 by Raymond B. Ladoo covered all angles of this business throughout the world. The outstanding plant article in this issue described the new operation of the Kinzel-Thompson Sand & Gravel Co. Knoxville, Tenn.

Agricultural Limestone Institute Holds Sixth Annual Convention

another ON THE SPOT report

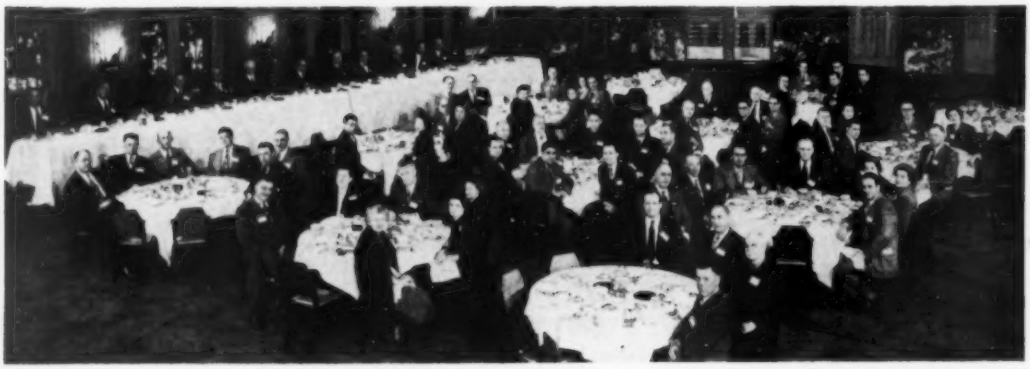
THE Agricultural Limestone Institute completed another successful and interesting national meeting at its sixth annual convention held February 7, 8, and 9, 1951, at the Netherland Plaza Hotel in Cincinnati, Ohio. Excellent speakers, brisk operating sessions, pertinent panel discussions, and a wealth of information combined to give those in attendance a well-rounded picture of what has happened within the industry during the last year and what prospects face the industry in 1951. Inasmuch as the first day of the A.L.I. convention coincided with the last day of the National Crushed Stone Association's meeting, both groups attended joint sessions throughout the day and evening of Wednesday, February 7. These sessions included a panel discussion on operating problems, a luncheon in the Hall of Mirrors, a highly informative *Shop Talk on Employee Relationships*, and an evening reception and banquet. (See N.C.S.A. convention story elsewhere in this issue.)

The organization re-elected Philip E. Heim, Carbon Limestone Company, Lowellville, O., to a second term as president of the institute. Also re-elected as regional vice-presidents were H. D. Brigstocke (Northeast region), Verne C. Morgan (East Central region), W. E. Hewitt (North Central region), C. M. Sims (Southern region), and John J. Stark (Western region). At a meeting of the board of directors of A.L.I., held on the last day of the convention, the following individuals were elected to serve on the executive committee: H. C. Krause, A. K. Hausman, H. A. Clark, William F. Childs III, K. K. Kinsey, John R. Rice, and John H. Riddle. Mr. Krause and Mr. Clark were also designated as members of the A.L.I. board to serve *ex officio* on the board of directors of the National Crushed Stone Association.

• Henry A. Huschke, managing director of A.L.I., P. E. Heim, A.L.I. president, and J. R. Boyd, A.L.I. secretary-treasurer.

Following the Thursday morning eye-opener, the showing of a color movie about the Hawaiian pineapple industry, the A.L.I. convention began to roll. President Philip E. Heim, called the meeting to order and greeted members and guests. He then introduced Managing Director Henry A. Huschke, who explained the association's efforts to promote agricultural limestone during 1950. Mr. Huschke pointed out that the four folders and two invisible-ink postcards that are parts of the promotional plans have been purchased in large quantity by members (over a million to date) mostly for distribution to farmers. Nearly 37,500 copies of the handbook, *About Agricultural Limestone*, have been purchased or distributed to selected individuals such as county agents, high school teachers, limestone truckers, and key farmers. Well over 1,000 ads have been run in local papers using the association's advertising mat service, he continued. Seventeen copies of the motion picture *The Other Side of the Fence* have been purchased by member companies, and copies rented were shown 210 times to over 12,000 people. In addition, Mr. Huschke pointed out, the association has expanded its promotional program during 1950 by the addition of 10 prepared radio-spot announcements, two attractive booths for display at fairs and farm shows, and a series of six different billboard posters.

It is impossible, Mr. Huschke said, to peer into the future and predict with any degree of certainty what our fate may be. But we do know,



• At the A.L.I. luncheon those attending heard Major Norman A. Imrie give a talk on conservation.

• The first meeting of the newly-elected board of directors of A.L.I.

he added, "that from now on into the indeterminate future, we will have to live with price controls, labor shortages, frozen wages, priorities, allocations, and all those undesired, distasteful things which Charles Wilson says we all dislike but must accept in the interest of preserving our very existence as human beings and as a free nation."

The report of the secretary-treasurer, J. R. Boyd, included comments about the recent rail rate increase, plans for association accident-report forms and small group insurance, and an appraisal of the prospects for the agstone industry under government regulations. Referring to Ex Parte 175, which replaces Ex Parte 168, Mr. Boyd said that the flat-rate blanket freight increase being asked may cause more than a few A.L.I. customers to be lost to the railroads. In some locations, he said, agstone producers consider the raise unfair and are finding it considerably cheaper to do business with trucking lines. Mr. Boyd notified the association's members that a committee had prepared accident-report forms which they were asked to fill out and send in as a help to others through the association's accident prevention efforts. Another committee, he added, is planning insurance for company groups employing less than 25 people. In concluding his report, the secretary-treasurer noted optimistically that the nonmetallic minerals industries should fare much better under present emergency measures than was their experience during the last war. This time, he said, the nonmetallic minerals industries have a very good chance of being classified as essential.

All Need Lime

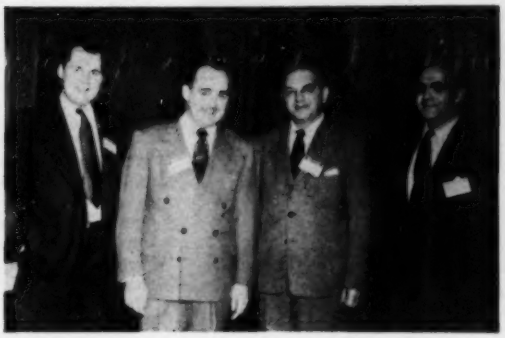
"There are some 800 different chemicals being used on the soil and the plants of the food we eat," according to Dr. Firman E. Bear, chairman of the soils department of Rutgers University. Many people object to some of these, he added, but there have been no complaints brought against limestone.

Pointing out that soils, plants, animals, and men need lime, Dr. Bear noted that 25,000,000 tons of limestone was used on U. S. soil in 1949. "Yet," he pointed out, "we should be using several times as much."

The use of agricultural limestone, Dr. Bear continued, flourishes in

• Paul M. Nauman, Dubuque Stone Products Co., Dubuque, Ia., Clint A. Allen, executive secretary, Iowa Agricultural Limeston Assn., Des Moines, and C. L. Schuster, Dubuque Stone Products Co.

• W. E. Kearn, Consumers Co., Chicago, K. K. Kinsey and Ben Ravitz, both of Concrete Materials & Construction Co., Cedar Rapids, Ia., and Emmett Galloway, Harristeel Products Co., New York.



• James L. Downs, Lehigh Stone Co., Kankakee, Ill., and C. H. Duesing, Atlas Powder Co., Chicago.

those areas having 30 or more inches of rain each year. As more rain falls, more limestone is needed to replace that washed away by the rain.

Today's fine, quick-acting agstone is far superior to that crushed and burned in home-made kilns 50 years ago, Dr. Bear noted. Liming has been reduced to a fine science, yet there are still many unanswered questions. A recent four-year survey by five Eastern states answered many of the questions asked about the use and need of agricultural limestone, he said, but even this doesn't tell us what pH factor is best for different soils and different crops. Usually, we consider a pH factor between 6 and 6.5 as the best for general purposes.

The ratio of four major soil elements is important, Dr. Bear noted, if the soil is to be maintained at a level sufficient to avoid such difficulties as decreased yieldage. The elements and their ratios are calcium, 65 percent; magnesium, 10 percent; potassium, 5 percent; and hydrogen, 20 percent. Added to this, and vitally necessary, is one part of molybdenum to every billion parts of soil. Dr. Bear suggested that this small percentage of molybdenum is probably obtained by adding the second ton of agstone per acre.

Potassium, which is often a component of fertilizer, and calcium, from lime, are competitive additives to the soil, Dr. Bear warned. A plant will absorb as much as 16 times more potassium than it needs while wanting calcium from limestone. On the other hand, he noted, a plant will only absorb 5 times the optimum amount of calcium. Before either is applied, the soil should be carefully tested to determine its needs.

Agricultural limestone, Dr. Bear continued, should be applied to soil in heavy quantities at not too frequent intervals. In applying it to acid soils, the soil should first be plowed, then spread with the agstone, not *vice-versa*. The reasoning for this, he said, is to keep the calcium additive near the top of the soil where it will do the most good by being easily available to young roots.

In concluding, Dr. Bear suggested that 50 cents be added to the price of each ton of agricultural limestone to use in an advertising campaign. The purpose of such a campaign, he said, would be to increase the use of lime and improve the soil and health of man.

Plea for Conservation Speaking on *Uncle Sam and the Prodigal Son*, Major Norman A. Imrie of Columbus, O., compared our waste of forest cover, water, top soil and wildlife in the last 100 years to the waste and foolish spending of the prodigal son. These natural resources, he said, work together, and the destruction of one leads to the eventual destruction of the others.

So important is this subject of conservation, said Major Imrie, that Fairfield Osborn's book, "Our Plundered Planet" will one day be as outstanding as have been Adam Smith's "Wealth of Nations" and Charles Darwin's "Origin of Species."

Conservation Procedure A concise review of the procedure for furnishing conservation materials in 1951 was presented by Roland Crumpler, chief, Conservation Materials and Services Section Production and Marketing Administration, Washington, D. C. After briefly reviewing the history of the conservation program since its inception in 1936, Mr. Crumpler described in some detail the purchase order plan which was adopted in 1940. Under this procedure, the speaker said, the farmer obtained an order for liming materials from the local county office. He presented this order to a dealer, paid his (the farmer's) portion of the cost, and the dealer collected the remainder of the cost from the government.

Under the purchase order plan, the speaker said, eligible dealers are determined on the basis of competitive quotations which are solicited from all the dealers in a particular area. The price is established by the quotation which offers standard material at the lowest price, and all dealers offering the same price, or a lower price, are automatically eligible to receive orders. All other dealers are notified that they must meet this price in order to become eligible. A full list of eligible dealers is subsequently posted on a bulletin board of the county office so that the farmer can select the particular dealer he prefers.

This procedure, the speaker said, leaves the question of fair prices "up in the air." Under the legislation which established the purchase order plan fair price was defined as the best (i.e. lowest) competitive price at which a dealer (or dealers) in a given area can supply materials.

At the last session of Congress, Mr. Crumpler said, a modification bill was introduced which would have eliminated the fair price consideration, thereby facilitating the operation of the entire program. According to the speaker, the bill failed to pass due very largely to the opposition of people who actually didn't understand it. Under the present procedure, Mr. Crumpler pointed out, little consideration is given to such important matters as magnesium *versus* calcium content, the fineness of the material, the quality

• Arthur Goff, Wallace Stone Co., Bay Port, Mich., and Casey Gravenhorst, Concrete Materials & Construction Co., Wichita, Kan.

• C. F. Osborn, Pennsylvania Crusher Co., St. Louis, Mo., and Paul N. Doll, Missouri Limestone Producers Assn., Jefferson City.

of service rendered, and other factors. The purpose of the proposed legislation was to eliminate these very shortcomings. Similar legislation, Mr. Crumpler said in conclusion, has been introduced at the present session, and there are good reasons to believe that it will pass both Houses.

TRANSPORTING AND SPREADING SYMPOSIUM

An outstanding feature of the A.L.I. convention program was a free-hitting symposium on transporting and spreading agricultural limestone. K. K. Kinsey, Concrete Materials & Construction Co., Cedar Rapids, Ia., presided at this session.

Spreader Trucks The first topic on the agenda posed the blunt question *Should producers own and operate spreader trucks?* The affirmative position was taken by John H. Riddle, Riddle Quarries, Inc., Marion, Kan. His own plant in central Kansas, Mr. Riddle said, serves 18 counties, or an area of approximately 10,000 square miles. Many of the farms in the area are operated by tenant farmers who have little interest in the long-range merits of a liming program. This indifference, Mr. Riddle added, is shared by the non-operating owners of the farms, with the result that only the most progressive farmer-owners willingly purchase agricultural limestone. The end result is that an agstone producer can thrive only by continuous, aggressive selling.

The speaker said that his company now operates 14 spreader trucks of its own, and subcontracts for 8 additional units when they are required. He believes that there are a number of advantages inherent in owning and operating his own spreaders. It gives him, for one thing, an opportunity to render the best possible service to his customers, and thus to establish a sound reputation for his company. Having control over drivers, Mr. Riddle pointed out, is in itself an assurance of good customer relationships. He added that in his opinion better collections are possible under this method of operation, and there is less loss of material in transit.

During the off season for spreading operations, Mr. Riddle said, it is possible to use company-owned trucks for other purposes. His own firm, for example, uses combination truck bodies so that the same units used for spreading can be employed for hauling crushed stone to highway projects and for similar work.

P. E. Heim, Carbon Limestone Company, Lowellville, O., took a position somewhat opposed to Mr. Riddle's, but he conceded that both systems have merit under certain conditions. Sixty-five spreader trucks, Mr. Heim said, operate out of his company's plant, and they are all privately owned and operated. Since this fleet just about takes care of the peak load during the spreading season, it would be necessary for the company to own that many trucks under the alternate system of operation. This would not only entail a large investment in equipment, Mr. Heim pointed out, but would pose a serious problem in determining what to do with the trucks and the drivers during off seasons. Under the present method their owner drivers can (and do) haul coal and other materials when they are not engaged in spreading agricultural limestone.

Mr. Heim believes that the owner-driver takes far better care of his equipment than is likely to be the case with an employee operating equipment owned by the company. Most owner-drivers are also able to look after maintenance and repairs themselves, at considerably less than the cost that would result if such work were done in the producer's shop.

The speaker also referred to the close fraternity that exists among owner-drivers, and their willingness to help other drivers when they are stuck or in other difficulties. He pointed out that the owner-driver has a definite stake in the kind of job which is done, and that indifferent operators are inevitably squeezed out.

Spreading Evenly *Spreading Limestone Evenly and in the Desired Amounts* was the subject of a talk presented by Orran Hofstetter of Orrville, O. Mr. Hofstetter acts as a sales agency only, working in two counties in north-central Ohio. He markets approximately 100,000 tons of agricultural limestone per year at a price which averages about a dollar higher than the P.M.A. price.

"The product we sell," Mr. Hofstetter said, "is good enough to sell without any help from the government, and we believe we can market more of it by vigorous selling than we could through P.M.A." He said that he uses double-spinner fan spreaders exclusively, but he believes that some other type should be used for coarse materials in order to spread them uniformly. In closing he expressed the opinion that producers should take more interest in the type of spreading equipment used for their materials.

Stockpiling Floyd W. Mumma, Columbia Quarry Company, St. Louis, Mo., gave an affirmative answer to the question *Can Limestone be economically stockpiled close to the point of use?* Inclement weather, planting, and the growing season, Mr. Mumma said, makes it impossible to spread limestone on at least half the days of the year. However, he pointed out, many half days can be utilized, provided the material is available in stockpiles located within a reasonable distance of the point of use. Unless stockpiled material is available, the trucker may have to wait three days or more before he can obtain delivery of a carload of material from the producer. This, the speaker stated, may result in the loss of many days which are suitable for spreading operations.

In regard to the question of economy, Mr. Mumma reminded his listeners that the dealer does not in any case make money on a mark-up of the product, but on the service rendered in hauling and spreading. For this reason he believes that the cost of unloading and stockpiling should be regarded simply as a part of the cost of doing business. He estimated that the cost of stockpiling should run about 20 cents per ton, and that it is entirely practical to use regular drivers and equipment for this purpose on non-spreading days.

The speaker admitted that stockpiled material inevitably picks up some moisture, and that the least trouble probably occurs with relatively coarse material. He recommends the use of a wide-throat spreader to prevent materials from bridging in the delivery units. Stockpiling materials close to the point of use, Mr. Mumma said, is unquestionably both economical and profitable, and experience indicates that it invariably results in hauling more loads per truck.

Delivering Agstone Norbert F. Schwarz, Pontiac Stone Company, Pontiac, Ill., discussed the problem of delivering limestone when farmers want it. This speaker expressed the opinion that about 80 percent of the farmers want delivery at approximately the same time, with the result that an almost impossible burden is thrust upon the supplier. The situation would improve considerably, Mr. Schwarz said, if farmers could be

persuaded to accept delivery as early in the year as possible.

According to Mr. Schwarz, more and more farmers are cooperating, and the problem has been further alleviated by the practice among dealers of giving preference to orders which are placed early in the year. The fact that dealers have more equipment now than ever before has also helped to ease the problem.

The speaker mentioned a number of things which can be done to effect further improvement in the delivery timing problem. His proposals included advertising to create early orders; stressing early ordering at every opportunity; filling orders in the sequence in which they are placed; stockpiling of materials which must be shipped by rail; soliciting aid from the various agricultural agencies, and from colleges and universities; and starting deliveries as soon as the first order is received.

Frozen Shipments According to William E. Kearn, Consumers Company, Chicago, there are three general types of frozen shipments: 1) shipments which are frozen only around the hopper doors; 2) shipments of material which has been loaded dry in cold weather and is subsequently refrozen; 3) and shipments of stockpiled material which is loaded in open-top cars and frozen.

The simplest and easiest solution to the first type, Mr. Kearn said, is to burn old crank case oil in bevel-topped 55 gallon steel drums located under the hopper doors. For the second type, which he referred to as "frozen set," he recommended the use of small charges of well-placed dynamite. For the third, or "solidly-frozen" type, the speaker suggested two possible methods: the use of live steam at 125 lbs. pressure or the use of kerosene burners placed within 2 inches of the metal in the hopper doors.

Mr. Kearn estimates that the average time required to thaw a car that is not too badly frozen is about 1½ hours, whereas severely frozen shipments may take as long as 5 or 6 hours to thaw. He cautioned against starting to unload a car when water first starts running from the hopper doors, since this practice removes the material needed to conduct the heat. In the course of the discussion following Mr. Kearn's remarks, one producer mentioned having good success in thawing gondolas by burning oil-soaked corn cobs on top of the frozen material.

Preventing Freezing William E. Dickinson, Calcium Chloride Association, Washington, D. C., told about some interesting applications of calcium chloride to prevent freezing of materials both in transit and in stockpiles. Pointing out that concentrated solutions of calcium chloride will not freeze even at temperatures as low as minus 60 deg. F., Mr. Dickinson said that the material has been used for many years to freeze-proof coal, iron ore, and (more recently) chrome ore and other materials. He indicated that freeze-proofing such materials is largely an economic problem, citing as an example that untreated coal may cost as much as a dollar a ton to unload in freezing weather, as compared with a cost of 20 cents per ton for unloading treated coal. Since the cost of treatment is only about 10 cents per ton, there is a net saving of about 70 cents per ton.

For fairly wet, coarse materials, Mr. Dickinson said, it is best to use flake calcium chloride, whereas fine, dry materials respond better to a solution of calcium chloride which is sprayed on during loading operations. To freeze-proof a 50-ton car of agricultural limestone, the speaker continued, the hopper and lower sides should be sprayed with a solution containing about 10 lbs. of calcium chloride; the limestone itself should be sprayed with about 5 lbs. of calcium chloride per ton; and flake calcium chloride should be spread on top of the car. This protection, Mr. Dickinson estimated, would cost about $5.40 per 50-ton car.

Several producers in the audience asked if the calcium chloride thus mixed with agricultural limestone would have any harmful effects on soil or crops. Subsequent discussion revealed that this aspect of the problem has not been investigated, but several agricultural men who were present expressed doubt that any harm would result from applications in the concentration indicated by the speaker.

Final Session The closing session of the A.L.I. convention was devoted entirely to discussion of the effects of liming and its place in the farm economy. The three speakers on this portion of the program were P. E. Grubb, plant manager of the DeKalb Agricultural Association, Johnstown, O., Dr. Jackson B. Hester, soil technologist for the Campbell Soup Company, Riverton, N. J., and R. Willis Stout, soil editor of *The Kentucky Farmer*, Louisville, Ky.

Mr. Grubb presented an excellent colored movie showing features of a highly successful production program which has been developed by the DeKalb association. His excellent running commentary called attention to the worthwhile gain in income per acre of land which can be achieved through such practices as draining, liming, and feeding the soil.

Making generous use of slides to illustrate his remarks, Dr. Hester showed how the use of agricultural limestone on crop lands increases the availability of practically all other plant nutrients. He also briefly reviewed the recent history of soil analysis, covering methods and procedures developed since the first conference on soil analysis, held in Boston in 1934.

According to Mr. Stout, at least two-thirds of the nation's farmers, instead of the present one-third, must start making practical use of existing knowledge concerning scientific farming practice before our population can be properly nourished. The speaker indicated the nature and scope of such practices by means of a somewhat detailed account, illustrated with colored slides, of what has been accomplished on his own grassland farm near Louisville.

At the close of the session it was announced that the summer meeting of the institute will be held in Chicago some time during the month of June. Precise dates will be determined and announced later.

Bargaining Ends in Party For Heads of Topeka Firms

Unionization need not be a headache for employer or employee. To cite an example, the sand-producing and concrete-mixing industry in Topeka, Kans., was not unionized, and wages varied from one company to another.

Then the heads of five companies — the Victory Sand and Stone Company, Kansas Sand Company, River Sand Company, Gerlach Builders' Supply Incorporated, and Consumers Sand Company — joined in sessions with representatives of Local 101, the AFL operating engineers' union, to discuss details of a possible contract.

Within three weeks, bargaining was completed. Local 101 was recognized, a contract running to April, 1952, was adopted, and an immediate increase of about 20 cents an hour was granted.

When the contract was signed, the union threw a party at the Hotel Kansan, where more than 30 persons, heads of the various companies, were guests. All in all, both sides agreed that there was much good will involved through all the meetings, and in the final agreement.

How to Get Longer Life From Your Screen Cloth

By FREDERICK J. VOLKOMMER
Screen Cloth Sales & Development
Robins Conveyors Division
Hewitt-Robins Incorporated, Passaic, N. J.

THE nation's rearmament program is putting more emphasis than ever before on the importance of speed and economy in the handling of those bulk materials necessary to keep our industrial production running at top speed.

High on the list of equipment vital to accelerating the flow of raw materials for industry is the vibrating screen which separates and sizes materials through the medium of one or more decks of woven wire screen cloth. From hundreds of reports submitted to us at the Hewitt-Robins Testing Laboratory, it is clear that few users of screens know in detail the type of information needed by the screen cloth manufacturer. It is the purpose of this article better to acquaint you with the manufacture of screen cloths, and to give some of the reasons why the cloth maker needs certain information in order to give satisfaction and trouble-free service.

There are many manufacturers of vibrating screens and almost as many different means of tensioning screen cloth to these vibrating screens. Most manufacturers of screen cloth maintain a file on all vibrating screens, but due to their large number and to alterations made on them in the plant, it is almost impossible to have all of the up-to-date tensioning information on all these machines. It is, therefore, important, when ordering replacement screen cloth for your particular vibrating screen, to furnish the cloth manufacturer with sufficient information to insure your receiving cloth that will properly fit your equipment.

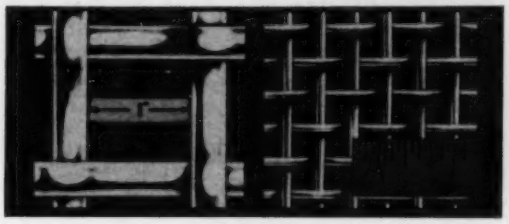


Figure 1.

The information required is as follows: Number of pieces, clear opening in inches, wire diameter, length and width of pieces, and whether flat pieces or with hooked edges. For pieces with hooked edges, give clamping width, out-to-out of hook strips, degree of angle (90, 135, 145 degrees, etc.) length of leg turn up or down, or one leg up and one leg down, etc. If all four sides are to be paneled, the above information must be furnished for all four sides. The size and trade name of your equipment is important.

Difference between Opening and Mesh

Coupled with this request for information, it is believed appropriate to differentiate between "opening" and "mesh", two commonly misused terms. (See Figure 1.) The difference is quite simple, however, if you keep in mind that "opening" refers to the dimension of the clear square opening between two adjacent parallel wires, while "mesh" refers to the number of openings per lineal inch, measured from center to center of parallel wires. Examples of the above: a 2-in. opening refers to a 2-in. absolutely clear opening between two adjacent parallel wires, while 2-mesh refers to two openings per lineal inch. These two items not only can be confusing to the user of screen cloth, but also to the manufacturer when requests for quotation or orders are received.

It is your desire to acquire a screen cloth that will give you the maximum service life consistent with the lowest cost per screened ton. Three very important factors enter into the selection of a screen cloth of this type. First, the type of construction; second, the kind of steel used in the fabrication of the screen cloth; and third, the proper installation of the screen cloth on your equipment. Let us take each of these steps and elaborate a little on each feature.

Types of Construction

The most desirable type of construction for maximum service life consistent with the lowest cost per screened ton is one which spreads the wear over as much wire surface as possible, to permit the screen cloth to wear out evenly, instead of in certain exposed areas. To accomplish this, a cloth with smooth surface gives the best results, because smooth-top construction offers 90

Figure 2.

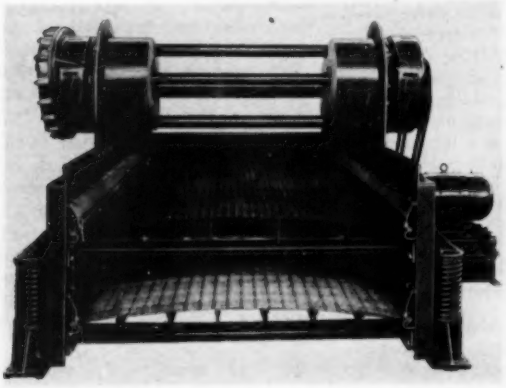
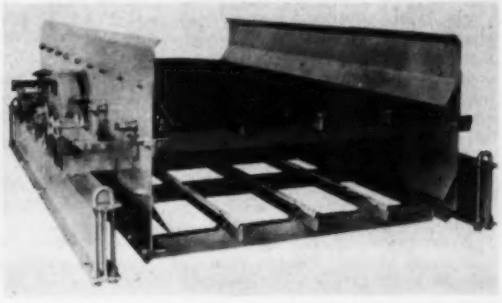


Figure 3.



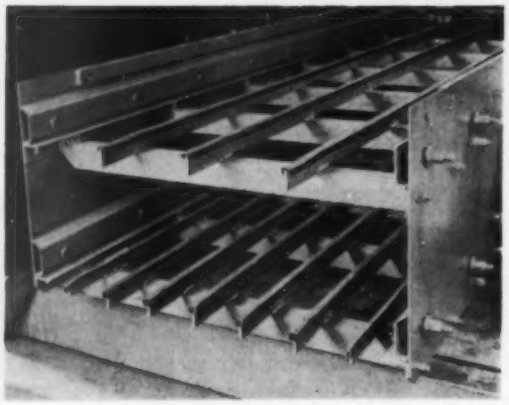


Figure 4.

percent more wearing surface than cloth constructed of the raised-crimp type. The raised-crimp type cloth wears out because the knuckles of the crimp wear down to completion. The wire adjacent to these knuckles, from observation, receives very little wear. The reason for this is that the knuckles, constituting a very small percentage of the total weight of wire, are the highest points of the screen cloth and naturally receive the weight of the load riding down the screen. This small percentage of total wire weight, therefore, must do the work of the larger percentage of wire weight. Under these circumstances, it can readily be seen why a screen cloth of this construction does not give maximum wear consistent with the weight of wire in its body.

The smooth-surfaced cloth does not have any exposed small-weight high spots which wear out prematurely, thus retiring a screen cloth with much wearing weight still remaining. The wearing weight of a smooth-surface screen cloth wears down evenly, thus retiring a cloth only after the maximum weight of wire has been profitably used. When a screen cloth of this type finally is retired, you feel that you have received your money's worth from it.

Certain hidden savings are also realized from a long-wearing screen cloth—costly shutdown required to change short-wearing cloths, high maintenance cost to have these short-wearing cloths changed, and the eventual patches to prevent oversize material from going through holes which have prematurely worn through before your scheduled change. Such items all lend themselves to inefficient operation and dissatisfaction.

Nevertheless, there are definite times and places where a smooth-surface cloth is not recommended. To name but a few of these: screening coke on a vibrating screen, where a great amount of agitation is required within a short distance; openings less than ⅜ in., and scalping. In most cases, the operator will have to be the judge as to the economics and efficiency of smooth-surface screen cloth over the conventional lock-crimp weave or double-crimp construction. The most nearly ideal locations to use flat top weave are the following: revolving screens, flat vibrating screens, and those handling friable materials, such as bituminous coal. Smooth surface weave gives accurate sizing with least resistance to flow.

Kinds of Wire

The next big item in the construction of a screen cloth is the kind of wire used. There are as many different kinds of wire used for the construction of cloth as there are suppliers of screen cloth. The ideal type is one which is not only abrasive-resistant but also fatigue-resistant. A wire may possess very good abrasion-resisting characteristics, but will break up in a very short time, due to fatigue.

Another factor which enters into the kind of wire to be used in the construction of a screen cloth is the type of equipment on which the cloth is to be installed. Some vibrators are more severe on screen cloth than others. A screen cloth that will give good service on one type of machine will break up in a short time on another. In order to supply cloth for all different types of vibrating screens, consideration must be given to the working characteristics of all these machines. A wire must be designed which will work on one vibrating machine as well as on another. This is a big item, for no operator wants a screen cloth that is going to break up due to fatigue or to wear out prematurely due to abrasion.

Smaller vs Larger Wire Diameters

Experience has demonstrated that a small wire made to correct specifications will, in most cases, outwear a larger-diameter wire woven into a screen cloth and used under the same conditions. This item is very important, where a larger percentage of open area is desired and weight is a factor. An illustration of how this works is on a small-size opening (such as ¼-in.) made from ¼-in. diameter wire. In order to weave such a tight specification, the wire must be abused to such an extent in the crimping operation that the strength is taken from the wire and the screen cloth becomes susceptible to fatigue-fracture. In addition, a much softer wire must be used in order to withstand the crimp. Here again, the wire will not withstand abrasion, and it will wear out very quickly. A ¼-in. opening made from .250-in. diameter wire has an open area of 25 percent and weighs 8.50 lbs. per sq. ft. The same specification (¼-in. opening) made out of .148-in. diameter tough, wear-resistant wire, will in most cases equal or even better the wear of the ¼-in. softer wire. The open area is increased to 39.4 percent and the weight is decreased to 3.76 lbs. per sq. ft. In this illustration, the ¼-in. opening .148-in. wire will be more efficient in the amount of separation passing through the screen cloth because of the increase in open area and, as a result of the reduction in weight, less power is required to move much less wire.

Installation and Application

The next very important phase of the screen cloth life is its installation and application. On most vibrating screens more than one piece of screen cloth can be utilized per deck. (See Figure 2.) It is not only more economical to use more than one continuous length per deck, but it is much easier to install replacement cloths. In the one-screen-cloth-per-deck installation, when the feed end of the screen cloth has worn out, the whole cloth must be discarded, regardless of the condition of the remaining portion of the screen cloth.

In most cases a baffle plate on the feed end of the screen directly below the feed chute, can be utilized very successfully. A baffle plate can be made from old conveyor belt and attached to the screen cloth by countersinking U-bolts in the baffle plate at each coner. This baffle plate serves two functions: it prevents wear; and it distributes the load more evenly over the

screening section of the vibrating screen.

Many good screen cloths are abused by the user who, in turn, wrongfully blames the manufacturer for short service life or inefficient screening. In most cases a little care in installation of the screen cloth and good maintenance will alleviate and even eliminate screening difficulties.

When screen cloths are replaced, it is extremely important to check the contactual parts of the life frame to make sure that all parts are in good order. One thing to look for is good rubber mounts on the bucker-up bars. (See Figures 2, 3, and 4.) Nothing will wear and break a screen cloth faster than metal-to-metal contact on the bucker-up bar. Also see that tensioning devices are in good order, blots are not stripped, tension plates are not worn, bent, corroded, broken or in any way unsuited for service; see that bucker-up bars are not broken or bent. In most cases where screen cloth breakage occurs, this can be completely eliminated by redesigning the number and height of the bucker-up bars.

Causes of Wire Breakage

It has been determined that in most cases screen cloth breakage can be traced to insufficient bucker-up bar support and poor tensioning. What results in this breakage can easily be analyzed: the screen cloth does not have enough residual body to support the load between two bucker-up bars and, as a result, bellies. This repeated bellying action flexes the screen cloth over the bucker-up bars, and screen cloth breakage occurs due to fatigue. If this condition is evident, additional bucker-up bars should be installed.

It is important to note that the center bucker-up bar should be at least ¼-in. higher than the two adjacent bucker-up bars. (Figures 3 and 4.) The remaining bucker-up bars should have equal step graduations down to the tension plate flange. This results in a slight bow in the screen cloth deck which aids in distributing the load evenly across the width of the screening area.

In most cases a sufficient number of bucker-up bars are installed by the manufacturer of your vibrating screen to support the initial screen cloth furnished with his equipment. Trouble usually starts as a result of substituting smaller openings and lighter wires for the original screen cloth specifications. When these substitutions are made, they are usually due to changes in sizing specifications. It is therefore imperative that when screen cloth specifications are altered to finer specifications, consideration be given to the necessity of increasing the number of bucker-up bars. (Figures 2 and 4.) If doubt should arise, recommendations can be procured from your vendor of screen cloth or the manufacturer of your vibrating screen.

Importance of Proper Tensioning

Upon completion of your investigation, when you are satisfied that the live frame is in perfect working order, the screen cloth is installed. It is surprising how few people realize the importance connected with proper tensioning of the cloth to the live frame. *Screens must be tensioned frequently and evenly.* When screen cloth panels are first installed and are tensioned equally and all the slack has been taken up, the vibrator should be started minus a load and permitted to run for a few minutes, then shut off. The cloth should then be checked for tensioning, and all the slack taken up. Your screen cloth is now ready for operation.

From this point on, tensioning should be checked at *frequent intervals* for several days, until absolutely no more slack can be taken up. Tension checks then can be made less frequently. This does not mean that tensioning checks are no longer required; checks should be made on tensioning for the life of the screen cloth. *Improper tensioning results in screen cloth breakage and premature wear.*

Accidental Find Results In Marl Mining Operation

The Rocky Mountain Marl Company has begun excavation of a marl deposit discovered accidentally by a ranch foreman on the Joseph Schilling ranch near Sanger, Calif. Finis Shepherd, Morris Fruit, and Jim Johnson compose the company which is developing this large deposit in the Round Mountain area.

The deposit, located under a 2-ft. layer of overburden, varies in depth from 16 in. to 2½ ft. An analysis showed the substance to be 35 percent pure white marl with a 1.38 percent iron content.

At present, a 4½-ton Carryall is being used to dig and stockpile the soft mineral. More than 300 tons of the marl have been stockpiled for the first shipment, and several ranches in the area are spreading it in a 2-ton-per-acre test. Supervising the strip-mining operation is the State Bureau of Mines, which has levied a 10-cent per ton tax.

These Figures Don't Lie— Agstone Is Still a Bargain

To spike the common misconception that agricultural limestone prices are out of line, an investigation was made by members of the Agricultural Limestone Institute staffs. The results were interesting.

Using the 1950 edition of *Crops and Markets*, published by the Bureau of Agricultural Economics, the investigators found that the prices received by farmers for all farm products in the years 1939 and 1949 increased by 162 percent, while the prices paid by farmers for the commodities they bought increased only 99 percent.

For example, the boost in the selling price of wheat (1949 over 1939) was 169 percent; for corn, 109 percent, for cotton, 214 percent; for hogs, 190 percent; for all farm products sold, 162 percent. For the same two years the percentage increases in items purchased by farmers were as follows: for coffee, 182 percent; for clothing (overalls), 159 percent; for nails, 120 percent; for fertilizer, 49 percent; for agricultural limestone (per ton), 28 percent; for all commodities bought, 99 percent.

The A.L.I. sleuths think that, when compared with most other items a farmer buys, the materials which improve the fertility of his land are definitely bargains.

High-Grade Sandstone Bed Discovered Near Ottawa

Discovery of high-grade sandstone a few miles from Ottawa, Ont., may soon reduce Canada's total dependence on foreign sources for glass-making materials.

This first big discovery of its kind in Canada has been made at Bell's Corners, about 10 miles southwest of Ottawa. The deposit areas are said to cover several acres.

Until now, the glass industry has had to look to foreign sources for its entire silica sand supplies, importing more than 500,000 tons in 1949 at a cost of $4,000,000.

Mines Minister Prudham announced that a new plant to process the sandstone into silica sand will be opened at Bell's Corners this year. It is expected that the plant will cost between $500,000 and $1,000,000.

Wage Controls Anticipated In A.M.A. Salary Handbook

For companies scrutinizing their salary programs in anticipation of wage controls, a 416-page A.M.A. *Handbook of Wage and Salary Administration* has just been published by the American Management Association.

The manual, which discusses the principles and techniques of wage and salary administration and company experiences with major types of job evaluation and wage administration, should be of particular interest to industry in the present mobilization period.

The 34-chapter handbook covers such subjects as the techniques of the wage survey, joint labor-management job evaluation, and effective compensation methods for salaried jobs.

Additional information may be obtained by writing the American Management Association, 330 West 42nd St., New York 18, N. Y.

WASHINGTON NEWS LETTER

Controls

WASHINGTON has definitely passed from the stage of "controls in prospect" to the stage of "controls in being." After much hesitation the Administration has committed itself to widespread, even complete, controls. In retrospect this act may turn out to have been the most revolutionary ever taken by any administration. For the first time in history, widespread controls have been imposed with the full recognition that they may be permanent.

The curious thing about the demand for the imposition of controls is that it did not come from any particular group. To be sure, housewives were hard put to stretch their dollars to cover all the things required to feed and clothe a family. But housewives are unorganized and therefore they carry less weight in Washington than their numbers would suggest.

A surprisingly powerful demand for controls came from businessmen. And it saw this demand more than any other which set the stage for controls at this time. Retailers—at least those who came to Washington—urgently demanded price controls. In the daily operation of their businesses, they observed consumer resistance to rising prices at first hand. And they were perfectly aware of the fact that the inflationary profit they made from marking up the goods on their shelves would be completely lost as soon as they tried to replace those goods.

Manufacturers, too, particularly those making consumer goods, expressed a desire for price controls. For example, clothing manufacturers made themselves perfectly clear in this regard when they met with officials of the National Production Administration.

The principal business opponents of price control were those who made or dealt in industrial raw materials. Here the government-inspired demand was almost certain to take all they could supply, regardless of price. But even they were fearful of what would happen to their costs, particularly labor costs, if prices and wages remained uncontrolled.

Thus, while businessmen's organizations and many businessmen themselves were taking official positions in opposition to price and wage controls, privately they were not really opposed. The government officials recognized this. Furthermore, there was no strongly organized pressure in Washington in opposition to those controls.

By S. HERBERT UNTERBERGER

As a matter of fact, the pressures are just now beginning to be exerted. They do not deal with the question of whether or not there should be controls, but rather with the *kind* of controls which will be applied. Businessmen have become far more sophisticated as a result of their World War II experience with controls. They know that there are certain kinds of controls that they can live with while other kinds create havoc with their businesses.

Retailers, for example, are putting on a real campaign for price controls in terms of mark-ups. They remember how badly they were squeezed by dollar ceilings during World War II. Very often manufacturers convinced the OPA that a price rise was appropriate, but this did not necessarily mean that retailers were permitted to raise their prices for the product. As a result their margins were reduced and their profits squeezed out. This reduction in gross margins was especially serious when volume declined.

Manufacturers, on the other hand, want the kind of price control which recognizes increased costs of manufacture. For example, they want to be sure that, if they are forced to give a wage increase by a government agency which settles a labor dispute, they will be able to increase their prices to cover the increased cost.

Certainly every businessman is not going to be able to get everything he wants under the control program. However, those who are able to bring their problems forcefully to the attention of the officials in charge are likely to get a control program more suited to their special situation.

Small Business

It is regrettable but true that small businessmen are least able to bring their problems out in the right places. As a consequence, they are often left out.

There is one group in Washington which, from time to time, tries to get some recognition for the problems of small businessmen; it is the Senate Small Business Committee. In a recent report that committee set forth the plight of the small businessman.

They pointed out that "the flow of many essential materials to small plants has been all but choked off," with the result that these businesses are faced with extinction unless they get defense orders. Unfortunately, there is no real program for making sure that they get these orders.

The committee, therefore, urged very strongly the immediate adoption of a Controlled Materials Plan similar to the one which worked quite successfully toward the latter part of World War II. They pointed out that while such a plan has been promised, very little has been done to implement the promise. Only by allocating scarce materials directly to the user did the committee believe small businessmen would get their share.

They recognized, however, that a Controlled Materials Plan could not be put into effect overnight. As a stop-gap measure they recommended that assurance be given that pending the establishment of a Controlled Materials Plan, no firm shall be precluded from engaging in defense work for the reason that necessary materials on "D. O." order will not be forthcoming promptly enough to allow him to meet his delivery date.

To help the small businessman, the committee also asked for the following:

"The determination by all agencies involved in the mobilization program to make fuller use of public informational techniques, so that at least that portion of popular confusion traceable to inadequate information may be eliminated.

"The augmentation of the National Production Administration staff to a point where the work can be more expeditiously handled, coupled with the indoctrination of new staff members recruited from large companies to the effect that they have definite responsibilities toward small enterprises.

"The early re-appraisal of defense and stockpile requirements in order to meet the most realistic foreseeable needs.

(*Continued on page* 124)

C ONSERVATION
M AINTENANCE
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by
QUAKER

HOW TO GET More Production . . . Less Maintenance

QUAKER'S COMPLETE PLAN FOR LONGER PRODUCTIVE LIFE FROM INDUSTRIAL RUBBER PRODUCTS

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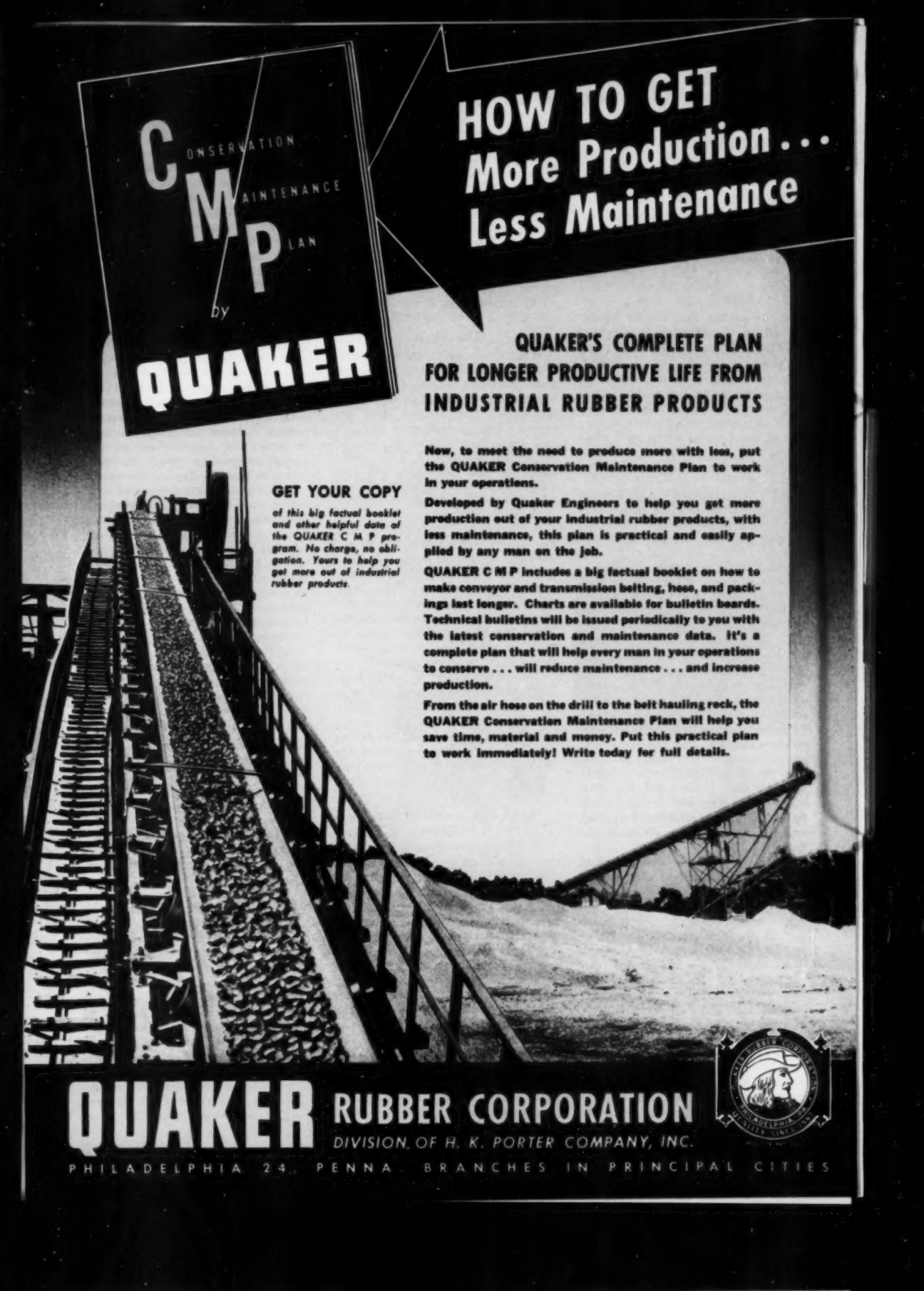


QUAKER RUBBER CORPORATION

DIVISION OF H. K. PORTER COMPANY, INC.

PHILADELPHIA 24, PENNA. BRANCHES IN PRINCIPAL CITIES

Report on Current Labor Developments

By S. HERBERT UNTERBERGER
Director of Research
Labor Relations Information Bureau
Washington, D. C.

The Wage Freeze

ON January 20, 1951, wages were frozen despite the hope that the Wage Stabilization Board would agree unanimously on a wage stabilization policy. The labor members of that Board could not get themselves to sign anything which remotely resembled a wage freeze. Time was running out, so Eric Johnston, Economic Stabilization Administrator, took the matter in his own hands and issued the freeze order known as General Wage Stabilization Regulation 1.

It stated that "no employer shall pay any employee and no employee shall receive 'wages, salaries, and other compensation' at a rate in excess of the rate at which such employee was compensated on January 25, 1951, without the prior approval of the Wage Stabilization Board. New employees shall not be compensated at rates higher than those in effect on January 25, 1951, for the jobs for which they are hired."

It will be noted that this order froze *everything*. Theoretically an employee could not be paid more even if he were promoted to a more important job, nor could he get a merit or length-of-service increase. Obviously, such a rigid freeze, could not last. And although Mr. Johnston used his powers to get the wage stabilization program under way, he provided in the same regulation that "petitions for the approval of any increase in 'wages, salaries and other compensation' . . . shall be filed with the Wage Stabilization Board," and also that, "this regulation may be modified, amended or superseded by orders and regulations hereafter issued by the Wage Stabilization Board."

Upon its issuance, the question was immediately raised as to what was included in "wages, salaries and other compensation." The Wage Stabilization Board addressed itself to that problem first, and on January 30, 1951, it issued its General Regulation No. 1 which stated that "increases in wages, salaries and other compensation . . . include increases in all forms of remuneration to employees by their employers for personal services, including, but not limited to, vacations and holiday payments, night shift and other bonuses, incentive payments, year-end bonuses, employer contributions to or payments of insurance or welfare benefits, employer contributions to a pension fund or annuity, payments in kind, and premium overtime practices and rates." In other words, the Wage Stabilization Board promptly declared that increase in all of the so-called fringe items are also subject to its approval.

The Thaw

When the wage freeze was issued, it was generally recognized that some flexibility would have to be written into the program to prevent hardships. The first of these occurred where certain wage increases had been agreed to or announced before the January 25, 1951, freeze date but had not been put into effect. Here workers who had been told that they would get an increase were caught in the freeze.

In its General Regulation No. 2 the Board automatically approved all such wage increases, provided that they were actually to become applicable no later than February 9. The only thing required of the employer is that he has to file with the Wage Stabilization Board the agreement or other document in which the increase is announced.

This action was not taken, however, without a strong dissent from the industry representatives of the Board, who pointed out that a cut-off date always leaves somebody dangling and also that while the employers involved have received approval to raise their wages, their prices remain frozen.

Merit and Length of Service Increases

Another place requiring flexibility was in the matter of operation of merit and length of service increases. In this connection the Board said, "Efficient industrial management, harmonious labor-management relations, and high-level production cannot be attained unless a large measure of flexibility and discretion is reserved to management, or to management and labor, as the case may be, in the operation of sound systems for merit and/or length-of-service increases. . ."

In its General Regulation No. 5, the Board stated that increases may continue to be granted in accordance with a merit or length-of-service increase plan which was in effect on January 25, 1951, provided that no increases shall be granted in excess of the specific amounts or percentages provided for in the plan. If no specific amounts or percentages are provided for, then the amount of increase may not be greater than the average amount given to employees in the same classification in the calendar year 1950. Where job classifications are grouped into labor grades or levels and wage or salary rate administration has been in terms of such grades or levels, the amount of increase may not be greater than the average amount given to employees in the same labor grade or level in the calendar year 1950. This rule immediately creates a problem because it permits different maximum amounts of merit or length-of-service increases depending upon the employee's classification or labor grade.

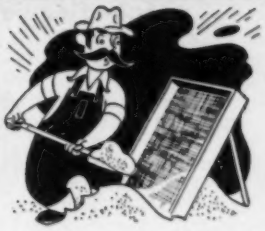
Evidence of the existence of such a plan may be found in a collective bargaining agreement in effect on or before January 25, 1951, or in the form of a written statement of policy or procedure or in a written notice that had been furnished to or posted for the employees. Such a written statement or notice must have been in effect on or before January 25, 1951.

In the absence of an established merit or length-of-service increase plan such increases may be given, nevertheless, provided that they conform with certain rules. These rules are as follows:

1. An employee who receives a merit or length-of-service increase shall not have received a merit and/or length-of-service increase during the 12 calendar months preceding the effective date of such increase.
2. The number of employees whose rates may be increased in any one calendar month shall not exceed the average number of such increases granted per month in the calendar year 1950 in each bargaining unit or other appropriate group of employees.
3. The increase granted an employee shall not exceed the average increase granted to employees in the same job classification during the calendar year 1950; in an establishment which has no job classification system the increase granted shall not ex-

(*Continued on page* 124)

Screenings



by William M. Avery

WITH conventions accounting for a major share of our time during the past several weeks, we find ourselves somewhat behind in our self-appointed supervision of the mildly wacky developments with which this department concerns itself. The fist full of press clippings that accumulated during our absence offers reassuring evidence, however, that the nonmetallic minerals industries are quite capable of making wacky copy without even the least bit of assistance from us.

The Stone of Scone business, for example, still appears to have Scotland Yard in a dither, and the only notable development seems to have been an offer by the Indiana Limestone Company of Bedford, Ind., to supply a replica. King George's private secretary advised *his* private secretary to instruct a private secretary in the British Embassy in Washington to express his majesty's regrets to the Indiana concern. Anyhow, we're glad to see one of our local outfits getting so chummy with British royalty.

The Planners

ACCORDING to an exploratory study prepared recently by the Department of the Interior, the nation's economy will require 30 percent more energy in 1965 than it consumed in 1947. Before making this announcement, we hope the Department of the Interior checked with the State Department to make sure that there is at least a chance that we'll still have a nation, let alone an economy, in 1965.

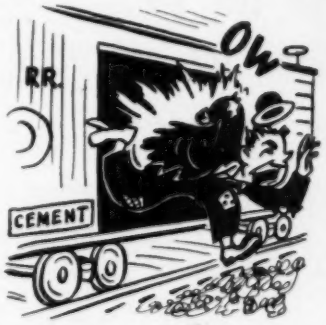
Worry! Worry!

THE brave new world of the atomic age appears to have opened up a new field for precast concrete. At any rate, several concerns have blossomed out with precast atomic shelters. One job, a 10-seater affair, sells for $595 delivered at the site. Accessories include benches, wooden floor, a shovel, a wrench, first-aid kit, and a hand-cranked fan, as well as a chemical filter for removing atomic-fission particles suspended in moisture. Once mom and pop and their eight off-spring get closed up in this rig, we suspect there'll be a lot more atomic fission going on inside than out. No doubt, they throw in the wrench to take care of that little detail.

This reminds us that the January issue of *Your Dog* magazine featured an article entiled "What About Your Dog If the Atom Bomb Falls?" For the information of *Your Dog, our* dog is going to have to take pot luck, along with our two gold fish, the youngsters' pet chameleons, and second-Cousin Nellie twice removed but still hanging around.

Maybe It Was "Hot"

A UNITED Press dispatch from Waco, Tex., tells about a hobo who suffered severe lime burns when he picked a box car loaded with



bulk cement for a night's sleep. It probably won't ease the guy's pain very much, but we know a lot of people who've been burned up about cement lately.

Perhaps It's Fly Ash

WE understand that an airlift was placed in operation several months ago to fly cement to a dam project in a remote mountain area near Mt. Marcy, N. Y. So far as we can learn, cement-hungry contractors along the route haven't yet made any serious effort to hijack the shipments. Seems that there's also a shortage of anti-aircraft cannon just now.

Historic Conjunction

WE THOUGHT you'd like to know that sometime during the week-long proceedings of the National Crushed Stone Association and the Agricultural Limestone Institute at Cincinnati, there occurred one of those improbable meetings which figure so prominently in the folk lore of conventions. Someone

Mr. Early and Mr. Tardy

with an eye for history arranged a meeting between a Mr. Tardy of the Lynn Sand & Stone Co. and a Mr. Early of the Euclid Road Machinery Co.

Sure enough, Mr. Tardy showed up early, and Mr. Early was a bit tardy, but somehow or another the two met long enough for us to commemorate the occasion with the accompanying picture. Who says nothing of importance ever happens at conventions?

What's in a Name?

YOU may not have any immediate use for such a device, but we thought you'd like to know that a Chicago firm has perfected and placed on sale a four-legged tripod. If they'd just waited a little longer, we're pretty sure *we* would have thought of that one. It's just about our speed.

Scandinavia's newest cement plant

SKANSKA CEMENT

The first in Sweden to use froth flotation, this 300,000 ton per year setup features the latest in efficient production methods.

THE history of "Stora Vika", Sweden's newest cement plant and the first to use the froth flotation process in that country, began shortly before the end of World War II, when officials of the Skanska Cementaktiebolaget had the foresight to realize that it would be necessary to expand their facilities in order to meet the increased post-war demand. They based this assumption on the results of a series of investigations carried out in 1944 by the Svenska Cementforeningen (Swedish Cement Federation) which indicated that the demand for cement would probably increase by about 50 percent by 1954, a prediction that proved quite conservative, since consumption increased 50 percent during the first two post-war years.

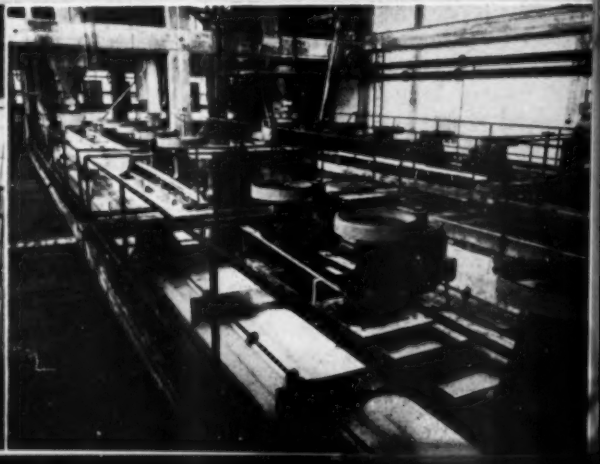
After surveying the market and raw material conditions, it became obvious that construction of an en-

kilns . . .

A view of the kiln house showing the two 145-m. (475-ft.) long rotary kilns. These kilns, equipped with slurry-preheaters, have a combined capacity of 1,000 metric tons of clinker every 24 hours.

froth flotation . . .

The froth flotation department, showing the two series of cells used in the process. This department is designed so that it is possible to treat all, part of, or none of the slurry, depending on the condition of the limestone.



tirely new plant would be a better move in the long run than a mere enlargement of existing facilities. The Stockholm area proved to be the best location, since it offered the largest centralized sales market with a yearly consumption of around 200,000 metric tons of cement. This location also allowed for bulk delivery methods, entailing savings in packing costs.

Geologically speaking, the immediate Stockholm area is of pronounced granitic character; limestone is non-existent. However, there are suitable limestone and clay deposits located a few miles from the capital. Geological examinations were made, and it was found that the area around Stora Vika (about 60 km. south of Stockholm toward Nynashamn) presented the most suitable source of raw materials.

After a period of planning it was decided to locate the plant at the limestone quarry in Stora Vika and to send the finished cement in bulk by water transport to the packing and distribution center in Stockholm proper.

In the spring of 1945 it was decided to go ahead with the project, with one rotary kiln. But in view of the rapidly growing demand for cement, the plans were extended to comprise two kilns with a total output of approximately 300,000 tons of cement per year. Actual construction was started on New Year's Day, 1946.

Quarry Like most primitive limestones, the deposits at Stora Vika contain varying quantities of impurities such as granite, leptite, and horneblende, and minerals containing magnesium silicate such as serpentine, phlogopite, etc. In order to remove these impurities, the factory is equipped with a plant for froth flotation.

From a plateau, at a suitable level, two quarries have been opened up, in which the impure contact formations that have to undergo flotation are broken through. In addition, a transport passage about 100 m. long has been opened into the limestone, where the higher-grade limestone is dug out by crater quarrying. The raw material is blasted at the rate of about 2,000 tons per day in two shifts. Two electric boring machines are used to bore the 150-mm. holes, while pneumatic drilling machines fitted with hard metal bits are used for the smaller holes. A pair of 2¼-cu. m. excavators load the shot material into three 15-ton semi-trailers coupled to a motor truck. Once the two quarries have been united, a more convenient continuous traffic system will be possible, and at the same time the increased quarry frontage will enable more selective digging of the varied types of limestone. A heavy-duty bulldozer is used for scraping together the blasted rock and for the clearing and maintenance of the road in the quarry.

Primary Crushing The limestone is fed by conveyor to the coarse crusher (primary crusher) which has a 1.8- by 1.2-m. opening. The building which houses the primary crusher also contains a compressor station supplying all of the compressed air for the quarry and drilling operations. The coarse crushed stone is then transported by band conveyor (belt conveyor) to a sorting plant (classifier), where it is divided into three sections: plus 150 mm., 25 to 150 mm., and so called "sylta" or minus 25 mm. Impure fractions are separated by hand on an upper sorting band (conveyor), and from the medium stone on two lower parallel sorting conveyors. There is also a separate conveyor which can be connected for transporting large odd lots of impure materials, which are then conveyed directly to two collecting hoppers. The minor quantities of pure limestone occurring in some cases are then sorted over from this conveyor to the normal sorting conveyors.

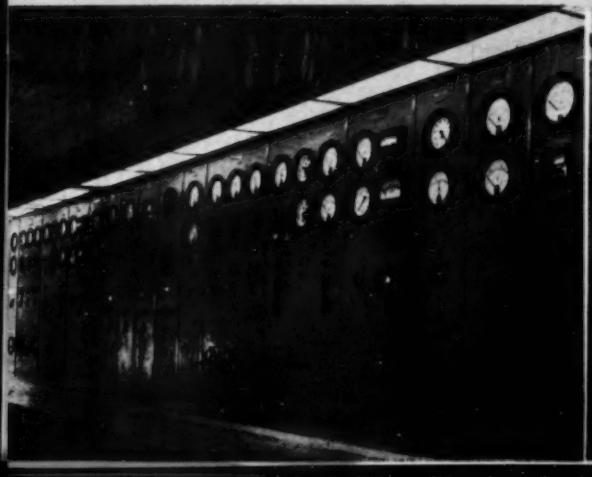
The pure, sorted stone is crushed down on a conical intermediate crusher and finally on a conical fine crusher to a size of 15 and 25 mm., respectively. The sylta bypasses the sorting conveyors, as well as the fine crushers, and is united with the fine crushed stone after the latter passes through the last crusher. The material is finally collected in two concrete silos each having a capacity of about 1,100 tons. If so desired, limestone of superior quality can be collected in one silo and inferior limestone in the other.

The impure material which is picked off the sorting conveyors is collected in hoppers in the sorting plant and from these can be loaded directly onto a motor truck or transferred to a smaller crusher located in the sorting plant. Here the stone is crushed down to a size suitable for macadam. In a special macadam plant this material can be separated into different fractions.

Material Storage From the limestone silos at the quarry the limestone is transported by ropeway (cableway) about 700 m. to the large storage hall (building)

instrumentation . . .

This central control panel, located in the cement mill department, with its various devices for regulating and recording temperatures, rates of feed, and correctness of feed, provides quite effective and valuable process control.



water transport . . .

The "Vika I", Skanska's 1800-ton capacity ship used for transport of the bulk cement from the plant at Stora Vika to the distribution center at Stockholm, a distance of 60 km. Both loading and unloading is handled by a completely automatic and enclosed system.

275 by 35 m. in size. In this hall the material is handled entirely by two grab cranes (clamshells) each with a 10-ton capacity. The cableway was considered the best means of transport due to the unevenness of the ground. The cableway is all automatic with mechanical charging of the baskets (buckets) which hold about 1,300 kg. of limestone each. Under the cableway and at its discharge station space has been provided for a reserve storage pile. If this is to be used, the unloading mechanism is just shifted so that the baskets are emptied over the new position instead of into the discharge tower. If necessary, the reserve limestone can be transported to the storage building by bulldozer.

The clay required for the process is excavated from one of the clay valleys nearby in as dry a state as possible. It is loaded onto 8-ton trucks and transported to a 4,000-ton storage location situated in an insulated building in direct connection with the warmest part of the kiln houses to thus avoid freezing of the material during the winter.

Slurry and Froth Flotation

Although the materials are ground with water into raw slurry, in accordance with the usual wet-process techniques, the use of the froth flotation process in Stora Vika's case entails somewhat different treatment of the raw materials. The limestone is first ground in two rather short primary mills driven by 600-hp. motors and operating in a closed circuit with rake classifiers. The product of these mills is relatively coarse, and the rake classifiers send the coarsest fractions back to the mills. From the mills the coarse slurry is pumped to the flotation plant, where it passes through continuously working vertical centrifugal separators. These are designed so that it is possible to take out a coarse fraction and, independent of this, the remaining fine material. This fine material is pumped directly to two large settling basins, placed in the kiln house, partly to avoid the inconveniences of cold weather and partly because the warmer temperatures aid the settling.

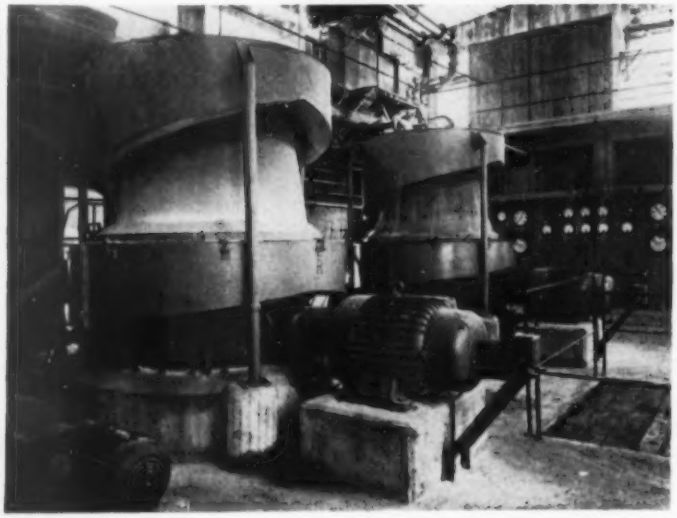
The coarse fraction is subjected to froth flotation. A simultaneous flotation of the finer material is unnecessary and would only require an excessive consumption of the flotation reagent. The flotation takes place in two series of cells, 18 pieces in all. The flotation reagents are prepared and stored in a special section of the centrifuge and flotation building. The overflow from the first flotation cells is an almost pure concentration of limestone slurry which is fed to the previously-mentioned settling basins in the kiln house. From the last cells the overflow represents an intermediate product which is returned to the flotation process. The bottom substance constitutes a waste product which contains mainly magnesium silicate and other silicates. This waste product is pumped off a special reservoir near the limestone area, where it settles. The surplus water is pumped back to the plant to be used again in the flotation department.

The flotation department is so arranged that it is possible to treat all, some fraction, or none of the limestone slurry, all depending upon the condition and composition of the limestone.

The correction materials are ground in a separate smaller mill located adjacent to the primary mills. These materials are not introduced along with the limestone into the primary mills, as they would then be separated off in the flotation process.

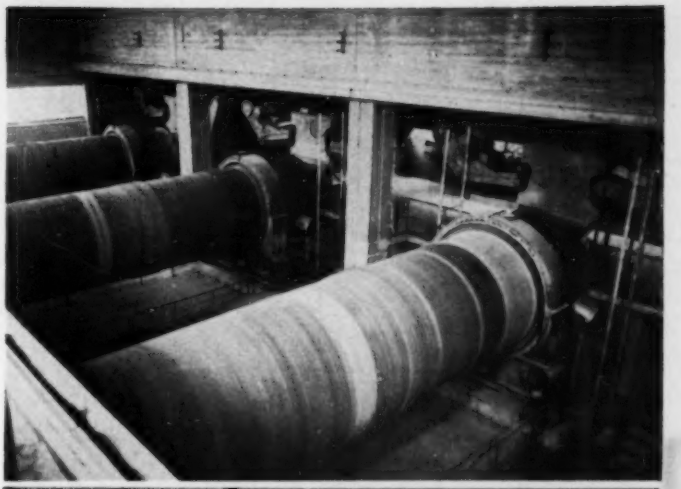
In connection with the clay storage are two wash mills of usual design in which the raw slurry is given

Here one of the two 2¼-cu. m. shovels is at work in the quarry. At the top, left, is one of the electric boring machines used for drilling the 150-mm. blast holes. About 2,000 tons of material is blasted each day in two shifts.



The coarse slurry passes through these vertical centrifugal separators, where the coarse fraction and the finer materials are continuously separated. The fine material passes to the settling basins in the kiln department, while the coarse fraction is subjected to froth flotation.

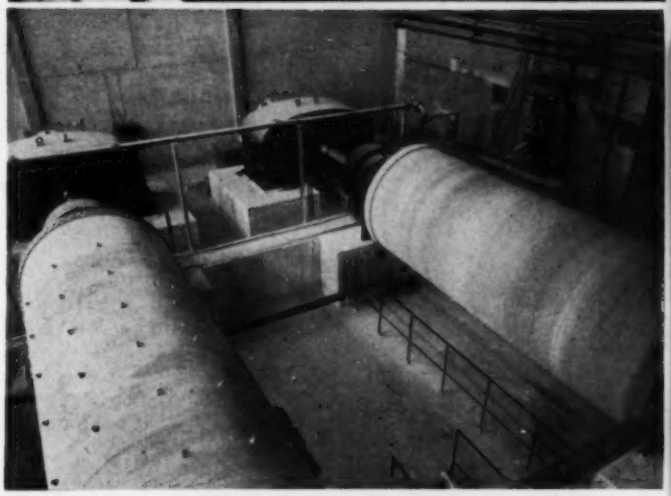
A view of the cement mill department, showing the three grinding mills in operation. These are fed from hoppers above and are powered by 1050-hp. electric motors. They are internally cooled with water, and are kept dust-free by electric filters.



its first proportioning, the material being led to these from the settling basins, the correction mill and the clay storage. The raw slurry is finally ground in two secondary mills which are driven by 390-hp. motors and placed between the clay wash mills and the flotation department. The raw slurry is pumped from there to four tall slurry tanks for the usual additional correction of the chemical composition.

The finally corrected raw slurry is then transferred, for further homogenizing to a large slurry basin of about 5,000-cu. m. capacity, equipped with both mechanical and pneumatic stirring. From this basin the raw slurry is fed to the rotary kilns.

Most of the mills of the plant, including the primary and correction mills, are connected with a number of concrete hoppers built into the east wall of the storage building. In this way the limestone can be transported directly from the cableway by special belt conveyors to these hoppers, thus making it necessary to use the storage building only if these hoppers are full. All lines connecting the mill department with centrifuges, flotation cells, clay wash mills, and secondary mills are carried through a common underground concrete tunnel under the adjacent plant area.



The raw slurry is finally ground in these two secondary mills, driven by 390-hp. motors, and placed between the clay wash mills and the flotation department.

Kilns The kiln house contains two 145-m. Unax kilns having a total production of 1,000 tons of clinker every 24 hours and equipped with slurry preheaters for better heat and efficiency. The kiln house also contains the coal grinding department, which is equipped with two Tirax mills designed for combined drying and grinding; these utilize the hot air from the Unax kilns. The coal is fed to these mills by belt conveyor from one end of the storage building which is set up for coal storage. The clinker from the rotary kilns is transported via shaking conveyor, crusher, drag chain conveyor, and elevator to the part of the storage building that adjoins the coal storage, making it possible to interchange the storage of clinker and coal in accordance with seasonal variations.

(*Continued on page* 103)

The coal mill department, showing one of the two mills designed for combined drying and grinding. These utilize the hot air from the kilns.

N. C. S. A. tackles vital issues at 34th convention

Above: The joint N.C.S.A.-A.L.I. banquet featured an address by James E. Gheen.

Left: Some of the winners of the 1949 N.C.S.A. Safety Contest Awards.

Top row: J. T. Jones, N. R. Garrett City Quarry Co.; T. W. Jones, New Haven Trap Rock Co.; and W. F. Wise, Southwest Stone Co.

Middle row: E. Z. Cole, General Crushed Stone Co.; Ray Cook, Ray Cook Construction Co.; Burr Shaver, General Crushed Stone Co.; Merle Price, General Crushed Stone Co.

Front row: J. G. Wilson, The Warner Company; Former Governor Harold G. Hoffman of New Jersey, who presented the awards; H. P. Jones and W. M. Lunan, both of General Crushed Stone Co.; and R. E. Sansom, American Limestone Co.

The luncheon of the N.C.S.A. Manufacturers' Division and annual business meeting, attended by division members only.

Excellent attendance—despite rough weather and travel conditions—timely program, and fine list of speakers highlight Cincinnati meeting

another ON THE SPOT report

THE 34th Annual Convention of the National Crushed Stone Association, held at the Netherland Plaza Hotel, Cincinnati, O., February 5, 6 and 7, 1951, was one of the most successful in its history in spite of the serious transportation difficulties due to the railroad strike and one of the year's worst cold spells. An unofficial and incomplete count of the registered attendance totaled 668 persons, including 275 member producers, 271 manufacturers' representatives, 59 ladies, and 63 guests. This was only a little below, in total and in each category, the attendance at the 1949 convention in New York, which set an all-time high for a non-exhibit year. Many are known to have tried to get transportation and failed, and many others arrived late. The unusually small number of ladies in attendance was also undoubtedly due to the above difficulties. The convention was held in the same week with that of the Agricultural Limestone Institute, on February 7, 8 and 9.

Those who did get there were rewarded by a well-rounded program geared to the times and needs of the industry. The list of speakers was even better than usual, consisting of top-flight authorities from both within and without the industry, who discoursed on a wide range of subjects of direct and indirect importance to their listeners. These subjects included the various phases of crushed stone production from the deposit through the shipment of the finished products, the utilization of these products in various types of construction and for other purposes, priorities, percentage depletion, various governmental actions, wage and price controls, and other business and operating matters. Special attention was devoted to the care and maintenance of equipment, a vital subject under present conditions. The panel discussion on operating problems was even more interesting than usual, probably partly because manufacturers' representatives were invited to participate in the discussion to a greater extent than ever before.

These were the official convention hostesses: Mrs. P. E. Heim, wife of the A.L.I. president; Mrs. J. R. Callanan, wife of N.C.S.A.'s president; and Mrs. Earl P. Holwadel, wife of a Cincinnati member.

Officers and Directors The officers of the association who so ably managed its affairs during the last year were re-elected. J. Reid Callanan (Callanan Road Improvement Co.) remains in office for another year, and James Savage (Buffalo Crushed Stone Corp.) remains treasurer. Re-elected to the association staff were: J. R. Boyd, administrative director; A. T. Goldbeck, engineering director; and J. E. Gray, field engineer.

There are three new regional vice-

The board of directors of N.C.S.A. at their preliminary session.

presidents: for the New England Region, Warren C. Rowe (Rowe Contracting Co.); for the Central Region, A. W. McThenia (Acme Limestone Co.); and for the Southeastern Region, L. J. Boxley (Blue Ridge Stone Corp.). New members of the board of directors are: J. V. Owens (Eastern Rock Products, Inc.); W. M. Palmer (Tyrone Rock Products Co.); Warren C. Rowe (Rowe Contracting Co.). Representing the A.L.I. on the board are: H. A. Clark (Consumers Co.); P. E. Heim (Carbon Limestone Co.); and H. C. Krause (Columbia Quarry Co.).

Business Conditions At the opening meeting on Monday President J. Reid Callanan presented a report on the business conditions in the crushed stone industry, summarizing the reports of the regional vice-presidents of the association. The year was a good one for the country as a whole but varied considerably in different sections. Production was up 40 percent in New England and 20 percent in other Eastern states. In the Central states production was down 15 percent and in the other states and Canada there was no change from 1949. Remarkable in view of the rapid increase in the cost of everything else was the fact that prices held steady everywhere except in the East, where they were up slightly. The ability of the industry to meet any reasonable demands of the future was evident from the fact that few plans were reported operating at full capacity for the year in spite of the record volume of production. The average for the industry, according to those reporting, was probably about 70 to 80 percent of capacity. Few expressed any opinions on the prospective demand for crushed stone in 1951.

Highway construction remained in first place in 1950 as a user of crushed stone; building construction forged ahead of railroad ballast into second place; and chemical and metallurgical stone remained in fourth place. No change in this order is expected in 1951, but some producers think highway building and construction demands will drop. Producers are already having trouble getting rubber, new equipment, and replacement parts; but most of them think the replacement of manpower is their most serious problem and that it will get worse. They feel that it is now too late to get more labor-saving equipment; so the problem is to see that equipment is in good shape and to keep the workers satisfied by giving them favorable working conditions, more pay, and other benefits.

Board of directors of the Manufacturers' Division of N.C.S.A. Top row: L. A. Rhodes, Jeffrey Mfg. Co., Columbus, O.; M. A. Nice, Hercules Powder Co., Wilmington, Del.; H. W. Newton, Barber-Greene Co., Aurora, Ill.; J. B. Terbell, American Manganese Steel Div., American Brake Shoe Co., New York, N. Y.
Middle row: D. M. Blackburn, Hendrick Mfg. Co., Carbondale, Pa.; E. M. Heuston, Bucyrus-Erie Co., South Milwaukee, Wis.; L. C. Mosley, Marion Power Shovel Co., Marion, O.; G. C. Holton, American Cyanamid Co., New York, N. Y.; R. D. Ketner, General Electric Co., Schenectady, N. Y.; L. A. Eiben, Northern Blower Co., Cleveland, O.; and E. J. Goes, Koehring Co., Milwaukee, Wis.
Bottom row: W. W. King, W. S. Tyler Co., Baltimore, Md.; I. F. Deister, Deister Machine Co., Fort Wayne, Ind.; J. R. Boyd, secretary, Manufacturers' Division, N.C.S.A., Washington, D. C.; J. C. McLanahan, chairman, N.C.S.A. Manufacturers' Division, McLanahan and Stone Corp., Hollidaysburg, Pa.; Cottrell Farrell, Easton Car and Construction Co., Easton, Pa.; and B. R. Maloney, E. I. du Pont de Nemours & Co., New York, N. Y.

Administrative Director's Report In his annual report, J. R. Boyd, administrative director, said that the financial condition of the association continues to be satisfactory, being even better than a year ago. He also reported an increase in membership to a present total of 127 active member companies. With respect to percentage depletion, he said that renewed efforts will be made to obtain its benefits for the crushed stone industry at the proper time. He also stated that the board of directors takes the position that the suggested rail rate increase should be opposed and pointed out that the railroads would lose considerable business to other forms of haulage if such an increase is made. He also stated that the crushed stone industry is on the list of those for which minimum wage determinations are to be made soon, but felt that the present disturbed conditions may postpone such action. He said, however, that the industry must be prepared with factual information when the time comes, and that questionnaires would be sent

out by the association which all producers should fill out for their own best interests.

Mr. Boyd assured his hearers that every effort has been made and will be made to keep the membership informed on the latest developments in Washington. As to the place of the crushed stone industry in mobilization, he said that the industry will have to do what it did in World War II, but it is not yet known how this will be done. As before, he said, we will not like everything that needs to be done but will do our part in the effort. He commented on the P56 order in effect during the last war and said something equally as good may develop. He also emphasized the fact that intelligent and experienced representation in Washington is now more than ever necessary.

R. A. Matthews, president, Kentucky Stone Co., Louisville, Ky., Mrs. Matthews, and J. W. Harward, General Crushed Stone Co., Philadelphia.

Engineering Director's Report A. T. Goldbeck, engineering director of N.C.S.A., opened his report with the statement that at no time during the last 25 years has the engineering work of the association been so effective as in 1950. More investigations in the laboratory were needed than ever before; troubles with concrete durability have come to light which threaten certain aggregates; and problems have arisen in the field of bituminous concrete, in aggregate production, in railroad ballast, in crushed aggregate base construction, and in other forms of aggregates.

During the last year, said Mr. Goldbeck, 50 research projects were completed and reported, the results of which were useful in helping to prevent future trouble or in pointing the way to more favorable results. Among these were investigations on the following: reasons for expansion in concrete pavements, soundness, absorption and freezing-and-thawing tests, alkali reaction, abnormal thermal coefficient of expansion, poor adhesion, etc. These tests covered not only aggregates but the concrete and bituminous mixtures containing them.

Many other tests and investigations were described by Mr. Goldbeck, and his assistant, James Rice, showed a moving picture of work going on in the association's laboratory. Illustrated were physical tests of crushed stone, including impact, compression, soundness and abrasion, and many others.

Mr. Goldbeck also described his continued activity in technical society work; he has been prominent in their affairs for many years and was recently elected vice-president of the American Concrete Institute for a term of two years. He also described the results of a questionnaire sent to members as to the advisability of making chemical analyses of stone for those members who might desire such service. It was decided after studying the answers on these questionnaires to take no such steps; but he said it is evident that research in the chemical and particularly the petrographic analysis of stone and concrete may be necessary in the future. Routine chemical testing, however, he called a job for the many commercial laboratories set up for that purpose.

In closing, Mr. Goldbeck gave a brief resume of the fourth Short Course for Salesmen, attended by 144 persons. In the group were 92 representatives of 32 member companies. Three days were devoted to lectures, and on the fourth day a demonstration was given in the N.C.S.A. laboratory. The 23 speakers included a number who were attending the Highway Research Board meeting the following week. This course, said Mr. Goldbeck, was the best attended of those held to date.

Report of Field Engineer In his report to the membership, Joseph E. Gray, field engineer, reported on many of the field investigations he had made during the year, some of them for individual members faced with serious problems, but most of them on problems affecting the entire industry. Among the individual problems were some involving a decision about opening a second quarry level, the production of stone sand for ready-mixed concrete, the development of specifications satisfactory to both producers and state highway engineers, investigation of reasons for rejection of stone, and means for curing the troubles. Some of the reasons were excessive softness, the presence of shale on chert, etc. Mr. Gray's activities also involved calls on most of the membership in order to learn their problems, if any, and perform any necessary engineering services.

Mr. Gray stressed the growing need for better roads at lower cost and said that the ideal road must have a base which will carry the load without frost action, be stable, and distribute the load to the subgrade without infiltration. A well-stabilized base, he said, spreads the load over a wide area of subgrade and prevents pressure from exceeding the bearing value of the subgrade which would cause it to flow. A base which is well graded will prevent both consolidation and flowing and consequent roughness in the road surface. Mr. Gray showed tables which compared open and dense graded base mixes and said that the former are far better; also if the content of minus 200-mesh material is under 10 per cent, the base course is safe from frost action. According to Mr. Gray, crusher run

Ladies attending the convention enjoyed an afternoon of canasta.

material makes the cheapest course and it is satisfactory if it meets the gradation specification. If not, it should be made to fit. He gave suggested gradations for 1-, 2-, and 3-in. maximum sizes. He said that care should be taken in placing, to avoid segregation; he recommended placing in 4-in. layers and compacting. Such bases, said Mr. Gray, are from 8 to 12 in. thick and offer a huge potential outlet to the crushed stone industry.

Safety Awards At a joint luncheon of N.C.S.A. and A.L.I., the N.C.S.A. presented its safety contest awards. Nineteen companies had all-injury free records, and on the basis of man-hours without lost-time accident, the Hagerstown Quarry of the North American Cement Corporation, at Hagerstown, Md., won first prize with 171,474 man-hours without a lost-time accident. Other accident-free companies received honorable mention.

The former governor of New Jersey, Harold G. Hoffman, concluded the luncheon with an interesting talk full of wit, humor and sage political advice.

Entertainment The program of entertainment was also up to N.C.S.A. standards. On Monday there was a greeting luncheon at which G. A. Austin (Consolidated Quarries Corporation) presided and at which Rear Admiral Ellis M. Zacharias spoke on world conditions. That night there was a cocktail party followed by a buffet dinner. On Wednesday there was a joint luncheon of the National Crushed Stone Assn. and the Agricultural Limestone Institute which was presided over by P. E. Heim (Carbon Limestone Company), president of A.L.I. The featured speaker was Harold G. Hoffman, former governor of New Jersey, who held forth on *Gripes and Grins* in his characteristic style. Later Mr. Hoffman made the N.C.S.A. Safety Contest award presentations which are described elsewhere in this article. Wednesday night the feature event was held, the joint reception and banquet of N.C.S.A. and A.L.I. J. Reid Callahan, president of N.C.S.A., presided at the banquet. The featured speaker was James E. Gheen, philosopher-humorist, of New York City. There was also a well-planned and varied program of entertainment for the ladies.

Selective Service and Manpower Speaking before the crushed stone producers, Col. Joel D. Griffing, chief, Manpower Division, National Selective Service Headquarters, outlined *Manpower Problems as Related to Selective Service*. In view of the stepped-up demand for men by the Armed Forces, he said, crushed stone producers, as well as others, can expect to be confronted with manpower problems.

Referring back to the Selective Service Act of 1940, the colonel noted that it not only neglected many factors and overlooked many potential draftees, but it also caused mix-ups and considerable inconvenience to many producers who hired seemingly non-draftable replacements for the men they lost in the first draft, only to have these replacements drafted.

After World War II, when the Selecitve Service Act expired, Colonel Griffing stated, a small group under General Lewis B. Hershey continued to study selective service problems. This group concluded that men under 26 years of age were the prime potentials for military service. Over 26, they decided, a man is established in a civilian skill or activity, has probably passed his physical peak, and often has a family and/or other dependents to support. They also concluded that the date of birth, rather than a fishbowl selection, should be used to determine the sequence of induction, which would be from 26 downward.

At present, the speaker said, the line is drawn at 25-year-olds. But in the event of a major emergency, and should all those under 26 be called up, the sequence of drafting will reverse itself and work upward through 27, then 28, then 29, and so forth. To the employer, he said, this means that the oldest and usually those employees with the most experience will be the very last to go.

Colonel Griffing pointed out that practically all young men under 26 will be called. The Armed Services will need 900,000 men per year. In order to maintain strength, just about all the physically fit men will be used—and a few more. At present, he said, the rejection rate is being carefully studied. It is felt that the present rejection rate of 50 to 60 percent is much too high and reflects a mis-evaluation of American youth. A re-evaluation and then re-induction is likely to take place. The biggest percentage of rejections so far, Colonel Griffing pointed out, has been due to failure to pass the intelligence test. This situation is being studied and may be revised. Many of these rejected men have the capacity to protect themselves and dispose of the enemy as did the illiterate Daniel Boone, and they are likely to be taken in a revised re-evaluation.

As things now stand, Colonel Griffing continued, those in the 18-19 to 26-year-old group will, in all probability, be called up. Those between 26 and 35 may be called in a major emergency. And those over 35, he pointed out, are the good employment risks as they are not likely to be called upon. We are probably in a long-range undertaking, he warned, and this is not to be viewed as a temporary setup.

Referring to the Selective Service Act of 1948, Colonel Griffing said that we have recaptured some of the ground we lost by not having a universal military training act. Amendments are being offered to the present act, he noted, and although not perfect, they will help round out what is to be, and actually now is, universal military service. We must recognize this as a long-range necessity and accept it.

To producers having essential employees under 25, the colonel suggested that such facts be made known to the local draft boards. Should this fail to exempt the essential employee, there remains the right to appeal to the state boards. However, Colonel Griffing warned, "Don't play your aces or trumps on a poor risk or a long shot that is likely to lose out."

Employee Relationships Before a joint session of N.C.S.A. and A.L.I. members, Hiram S. (Cy) Hall, a recognized authority on employer-employee relations, and vice-president of the Bigelow-Sanford Carpet Co., began a *Shop Talk on Employee Relationships* with a question aimed at management. "What," he asked, "is your attitude towards collective bargaining?"

By way of answering the question, Mr. Hall pointed out the great strides made by labor since World War II, even under the Taft-Hartley Act. Collective bargaining, he said, is an aspect of doing business that determines whether you stay in business or not. Be realistic and face the fact that bargaining is here to stay. A sound management attitude recognizes bargaining and applies to it the same sound non-emotional attitude that exists between competing employers.

Some of management's attitudes toward bargaining do active harm to management's position, Mr. Hall continued. There is the "sweetheart shop" which attempts to buy everything for the boys very quickly, hop-

Top row, left: Charles H. Bussmann, Pit and Quarry, Cleveland, O., and F. E. Artz, Keystone Driller Co., Beaver Falls, Pa.

Top row, center: F. J. Buffington, L. F. Muller, John Jorgensen, William Ferguson, C. J. Stenz, W. S. McHenry, and Greer Tomlins, all of the New York Trap Rock Corp.

Top, right: H. W. Newton, Barber-Greene Co., Aurora, Ill., and W. J. Flach, Ohio Gravel Co., Cincinnati, O.

Middle row, left: George Fraunfelder, Easton Car & Construction Co., Easton, Pa., J. F. Berger, John A. Roebling's Sons Co., Roebling, N. J., and W. A. Wilson, Pit and Quarry, New York.

Middle row, center: J. T. Jones, N. R. Garrett City Quarry, Columbia, Mo., and Emmett Gallaway, Harristeel Products Co., New York.

Middle row, right: R. S. Hunt, Stedman Foundry & Machine Co., Aurora, Ind., Paul Frank, Paul Frank, Inc., North Vernon, Ind., and E. E. Schneider, Stedman Foundry & Machine Co.

Bottom row, left: Cottrell Farrell, Easton Car & Construction Co., R. D. Kotner, General Electric Co., Schenectady, N. Y., J. C. McLanahan, McLanahan & Stone Corp., Hollidaysburg, Pa., and W. W. King, W. S. Tyler Co., Cleveland, O.

Bottom row, center: A. W. McThenia, Acme Limestone Co., Ft. Spring, W. Va., J. R. Callanan, Callanan Road Improvement Co., South Bethlehem, N. Y. (also N.C.S.A. president), and Jack Thoenen, U. S. Bureau of Mines, Tuscaloosa, Ala.

Bottom row, right: T. W. Revell, Northwest Engineering Co., Columbus, O., and M. G. Walker and R. F. Gleason, both of the Murphy Diesel Co., Milwaukee, Wis.

ing for a fast turnover and considerable profit before another change in the union's attitude. Somewhat similar is appeasement or the "give-'em-what-they-want" attitude. Both lose the respect of the employee.

Another harmful position cited by Mr. Hall is management of the old school whose exponents say bluntly: "We hate the S.O.B.'s and will fight 'em to the finish." Nearly as bad is the standing on stubbornness which claims to be right about everything and won't budge an inch. Too, there is the "high-principles" attitude which upholds a fine old moral and ethical code of self-righteousness without really knowing all the facts. None of these attitudes contributes towards the strengthening of management's position.

Other detrimental attitudes which Mr. Hall warned employers to avoid are those of the mental coward who says "see my lawyer," the "what'll-I-do" bewilderment of management caught with his pants down, and the disgruntled attitude of "I'll take a strike." Concerning this latter attitude, Mr. Hall asked, "When the chips are down, will he really take a strike?" Don't take this attitude, he cautioned, unless you're willing to follow it through; but remember, too, that there are times when it pays to take a strike.

Certain elements should be embodied in any basic labor policy developed by management, according to Mr. Hall. First he pointed out, management must accept the fact that employees have a right to bargain collectively. Accept the unions as a basic element to be considered and dealt with in all employee-employer relations. And don't forget, he added, it is the responsibility of management to give leadership to labor relations in the interest of production, lower prices, and self-interest. Recognize the equality and freedom of union interests, but learn what to expect from the union. Remember that self-respect from the individual members of the union leads to mutual respect.

Mr. Hall suggested that management might promote its own position by establishing a program of persuasive education for handling facts during bargaining. First, he said, approach conferences with a friendly, problem-solving attitude. Then assemble *all* the facts *from both sides!* Agree upon interpretation of the facts. Finally, considering each decision with care, make your judicial decision on all the facts as final and binding. In dealing directly with employees, and here Mr. Hall stopped to remind his audiences that the Taft-Hartley Act permits the employer to express himself directly to his employees as long as he avoids coercion or bribery, you should seek to develop confidence. Seek a common ground of common information. Explain your practices and policies. Avoid abruptness in all matters such as layoffs, shutdowns, overtime, and transfers. Through a consistent program such as this, Mr. Hall said, confidence in the employer will develop among the employees.

Relations with the union can be improved too, Mr. Hall said, if you understand the nature of the union. The union is a principle, an agent for a collective group of employees, an institution, a way of life, and a political body with political groupings within it. Too, the union must be viewed as a means of livelihood for paid union leaders. In dealing with a business agent, reminded Mr. Hall, remember that he is first of all a human being. Use what the trade calls "pre-negotiation technique," in your dealing with him, that is, take him aside and tell him what you will and won't do on a particular problem. Remember, too, that he is an actor and must put on a show both before you and his union.

"Just before getting down to the business of bargaining in the annual meeting," Mr. Hall said, "state, and have it clearly understood, that you are bargaining *in the overall*, that you agree to everything or nothing." Long before the heat of bargaining disrupts the meeting, envision what you will do it no agreement is reached. Now, he continued, is the time to plan and agree upon a three-day extension with mutual exchanges, such as no scab labor, in return for necessary maintenance and inspection.

In the bargaining process, he continued, use the term "proposals", not "demands". Take a day to weigh each of the union's proposals, shake out the fluff, and determine the hard rock. State, and have it understood, that management will have some counter-proposals tomorrow. And whatever you do, he warned, get your agreements across before you settle the money disputes. Afterwards it may be too late.

There are certain strategies and techniques in bargaining that Mr. Hall considers practically iron-bound rules. First, he cautioned his audience, never let the president bargain a contract. "Too often, he will give the joint away." Actually, he continued, the president should be management's last court of resort, much as the local is the union's last court of resort. Too, management's negotiations should always control the meeting. Talk *facts* and be careful of fluff and double-talk. When tempers flare, call a caucus, and during the recess, straighten out the labor leaders. Don't forget, Mr. Hall said, there is a reluctance on the part of the union to strike.

When you bring in your counter-proposals the following day, Mr. Hall said, take a page from the union's book and ask for more than you expect to get. This "backing into an agreement" is expected on both sides. State the evidence for your proposals as unquestionable, but question the union's evidence. When negotiations reach a stalemate, he continued, try the "packaged counter-proposals," that is, offer to accept a few of their proposals in exchange for their accepting a few of yours. Always try to leave the impression that management has made the last concession.

Now is the time to introduce automatic machinery, Mr. Hall said. A labor shortage is likely in this war-like era, and labor's opposition to man-replacing machinery should be considerably lessened. So if you have been planning automatic production, work it into your next contract. The time to begin working on that next contract is the very next day after the present contract is agreed upon and signed.

Mr. Hall concluded his very informative talk by warning his audience of six controversial subjects that must be handled with care in all employee-employer relations. These he listed as union security, management security and right of operation, grievance procedures, what arbitration includes, seniority tailored to the operation of a plant, and wages and hours. These controversial areas are at the heart of most bargaining negotiations, Mr. Hall said, and should be approached with care and consideration.

Wage and Price Controls John C. Gall, general counsel for the National Crushed Stone Association, opened his discussion of wage and price controls with the statement that it is no longer worth debating whether or not there should be such controls. The problem now, he said, is to determine how best to live and operate under them. Although the major excuse for controls is to limit inflation, Mr. Gall believes that price controls have a natural tendency to create inflation by limiting production and encouraging black market dealings. For this reason, he said, it

is impossible to have such controls for very long without establishing a rationing program on the retail level.

Wage control and price control, Mr. Gall told his audience, are wholly different, and they lead to entirely different results. He said that the tendency will inevitably be to loosen control on wages and to tighten control on prices, just as was done during World War II. Thus, the speaker pointed out, industry will again be caught in the squeeze between rigidly fixed prices and rising wages.

Mr. Gall briefly outlined the terms of the recently-announced move to stabilize wages and prices, referring in some detail to the various orders which have been issued in an effort to clarify the original order. He said that the freeze has been relaxed to exclude increases under contracts made just before the freeze and effective with 15 days of the date of the order. Still to be clarified, Mr. Gall said, is the status of increases covered by escalator and cost-of-living clauses in existing contracts.

The speaker called attention to another clarifying order which permits employers to make wage increases that are required by law. The most recent order, Mr. Gall said, deals with increases to individual employees based on merit, length of service, promotion, or change of shift. If such increases represent the employer's established practice in 1950, or are part of an existing collective bargaining agreement, the approval of the Wage Stabilization Board is not required. However, employers must be prepared to produce records showing that it was the practice or policy to make such increases in 1950. There is still some doubt, Mr. Gall said, in regard to the handling of executive salaries.

According to Mr. Gall, labor disputes should not present any serious problem in the near future. He called attention to the fact that most of the basic industries are now covered by long-term contracts with some time to run, and that more than 2,000,000 workers are at present covered by contracts which contain escalator clauses. In spite of this, he said, organized labor may succeed in getting the government to set up a War Labor Disputes Agency. If this is done, Mr. Gall believes that such an agency should have power to act only when existing agencies have failed, and should have no jurisdiction in disputes which involve wage stabilization.

Priorities Francis B. Speaker, chief, Maintenance Repair, and Operations Branch, Requirements Division, Defense Minerals Administration, was scheduled to speak on *The Priorities Situation.* He was unable to attend, as the DMA is in the midst of working out of a material control plan. A letter from him read by Mr. Boyd stated that a definite material control plan was scheduled to come through in about 3 months, and that an interim plan was being worked on at present. The letter stated that the nonmetallic minerals industries were in a much better position to get priorities and assistance under the coming plans than they were during World War II.

Past chairmen of the N.C.S.A. Manufacturers' Division: M. S. Lambert, 1937; M. B. Garber, 1926; Roy Wills, 1939; Cottrell Farrell, 1948-49; J. B. Terbell, 1946-47; Abe Goldberg, 1932-33; Milo A. Nice, 1944-45; J. H. Fulkerson, 1941-43.

World Situation *Today's World—Tomorrow's Peace* was the subject of a talk by Rear Admiral Ellis M. Zacharias, U.S.N., former director of Naval Intelligence, before the Greeting Luncheon on the opening day of the convention. Admiral Zacharias is unusually well qualified to talk on this subject because of his background and experience. He is also famous for his two best sellers, "Secret Missions" and "Behind Closed Doors". He feels that this country is now in an important but not critical period in its history if we use our tools right. Until Korea we were confronted with a possible third world war, and Korea was a blunder on our part but an even greater one for Russia. He said that a unified Europe is a necessity for future world peace and much must be done before this can be accomplished. Jugoslavia is, in his opinion, the only European country with good morale. He warned that with Europe under its control, Russia would be the No. 1 nation and that, like Japan, it might let its own propaganda lead it into war. To counteract Russian propaganda, which consists of a constant repetition of lies, we should intensify our form of psychological warfare which consists of a constant repetition of the truth. This, said the admiral, is our most potent weapon, and it should be used by a department entirely separate from the State Department. He also stated that we have bacteriological, biological, and other weapons which are considered more potent than the A-bomb.

According to Admiral Zacharias, our real job in civil defense is to check the 50,000 Communists and the 500,000 Reds living in this country. They could wreck our productive plant if not checked. He said that in order to take the proper preventive measures, we must be sure to send to Congress men who have the courage to take such steps, and who have no weaknesses which might make them vulnerable to the type of pressure that has recently been so widely publicized.

Highways and National Defense Our highways play a very vital part in this country's assembly line, Lt. Gen. Eugene Reybold, executive-vice president of the American Road Builders Association, told the Tuesday morning assembly of crushed stone producers. Yet our highways, he continued, have not kept pace with out technical developments and advances. In fact, we are not even holding our own against transportation developments. Efforts must be made, he explained, to bring the American highway system up to a level to meet the military and economic needs of the impending situation, and this cannot be

accomplished by a continuation of a business-as-usual outlook.

During World War II,, General Reybold pointed out, our highways got only the minimum necessary maintenance. Materials were unavailable. The Army contributed to worsening the situation by "Shanghaiing" highway personnel. Ours was a close shave in getting through the war. But we can be optimistic about our highways and the highway industry today, General Reybold said. He cited President Truman's recent budget message in which the President noted the need of a long-range improvement program for highways, especially those of interstate and military use, and recommended increased federal highway expenditures. Too, General Reybold added, the highway industry can have confidence in today's Bureau of Public Roads, the federal highway agency headed by Commissioner McDonald.

Essential highway work must go on uninterrupted, the speaker declared. Access roads—the construction of many will start in 1951—and the interstate system will probably receive funds diverted from other roads. Selfless unity of effort must be shown by road builders to assure sound highways commensurate with the needs of the economy and the defense efforts. In conclusion, General Reybold stated two of the aims of the American Road Builders Association: advocacy of a sound highway program embodying proper federal expenditures, and highway revenues spent for highway purposes with no diversion to other uses.

Resurfacing Old Pavement Speaking on the widening and resurfacing of old pavement, Charles W. Allen, research engineer for the Ohio State Department of Highways, cited the need for a general stepped-up widening, resurfacing, and rebuilding program if most highway departments are to preserve their present investments. Mr. Allen augmented his statement by pointing to an Ohio study program which found that over 3,000 miles of pavement needed widening or resurfacing, even though resurfacing work had been progressively going on.

Using a series of slides in conjunction with his lecture, Mr. Allen explained the procedures being used to widen and resurface Ohio highways. Widening in Ohio, he said, is usually done in connection with resurfacing, and many factors play a part in determining whether to resurface, rebuild, or abandon. Most widening, he said, has been constructed of a flexible type material such as bituminous concrete with a bituminous undercoating. Ohio uses both dry-bound macadam and the wet-bound process, Mr. Allen pointed out, but the mileage of portland cement concrete resurfacing is not nearly so extensive as the mileage of bituminous concrete resurfacing.

The slides that accompanied Mr. Allen's speech showed widening, resurfacing, and rebuilding of Ohio highways; the use of trench diggers, graders, and hand-digging for widening out areas; several types of rollers; and the three-layer step-back method of widening without steel forms. This step-back method, according to Mr. Allen, was developed during World War II, when steel forms were not available, and was adopted as standard equipment procedure in 1945 for all Ohio bituminous concrete widening. In construction, this method is simply to lay three separate layers of 3-in. bituminous concrete one upon the other with a 3-in. set-back progressing from the bottom layer upward.

Macadam Construction The past several years have seen some highly significant macadam road machinery being used with great effectiveness. This fact was visually demonstrated and fully described by the motion picture *Macadam Construction by New Machine Methods,* which was shown N.C.S.A. members by Fred B. Swineford, former chief engineer of the Ohio State Highway Commission, and present engineer-director of Macadam Pavements, Inc., Columbus, O. Comparing the old method of constructing macadam roads and bases largely by hand labor, the film showed the mechanical methods that through the years have been improved to construct excellent load-carrying capacities on well-built, economical, macadam bases.

Quarry Lubrication *Quarry Lubrication* was the subject discussed by Luther J. Burriss, chief of engineering and procurement, Weston & Brooker Company, Columbia, S.C. He first emphasized that there is no such thing as an ideal lubricant. Each will meet some of the requirements but not others, and the problem of the producer is to select the ones that meet his most important needs. He described the various types of major equipment used in most crushed stone operations and the special types of lubricants required for each in order to get the best lubrication and service life. He advised using the types and makes of lubricants recommended by the manufacturer of a machine and also urged his listeners to deal with lubricating firms which will sample the lubricant in use at intervals to determine when its useful life is over. Most companies, he said, throw away good lubricant long before that point.

Mr. Burriss also pointed out that the main problem with electric motors is over-lubrication. For overall economy, he urged the use of only the highest grades of lubricants and added that in the present emergency the conservation of equipment is doubly important. Forgetting, he said, is also a serious problem in lubrication; he advised the use of automatic lubrication wherever possible and practical in order to eliminate the human element.

In the discussion which followed this interesting paper it was brought out that there are now on the market special cold-weather lubricants for vibrating screens. These apparently have met with varying degrees of success.

It was also stated that pressure oil lubrication and oil filters are necessary on modern high-speed crushers. There are, however, some special oils with additives, and it was stated that filters may remove some of the important additives from these oils.

Conveyor Belts In discussing the *Use and Abuse of Conveyor Belts,* Melvin C. Dow, chief engineer, New York Trap Rock Corporation, Newburgh, N.Y., stated that the inherent reliability and foolproofness of the belt conveyor often leads to its being neglected. He emphasized the importance at this time of doing everything possible to prolong the life of conveyor belts and their precious rubber. The cost of replacement is also worth considering, as the price of the cotton, rubber and labor entering into belt manufacture has gone up rapidly. He said that each belt should be studied as an individual problem and the necessary steps taken to preserve it.

The design of a belt conveyor, said Mr. Dow, is an important factor which should be adjusted for the load a belt must carry. Most of the unavoidable wear on a belt is at the loading point and this can be kept at the minimum by loading at a uniform rate, loading in the direction of travel of the belt, loading at the speed of the belt, loading without impact, and loading without

turbulence or spillage. He urged that producers check the following things about each conveyor belt:

The material should be discharged from as close to the surface of the belt as possible.

The stream of material should not hit the top of a steel idler. Flexible idlers should be used at the loading point, and pneumatic ones where conditions are unusually severe.

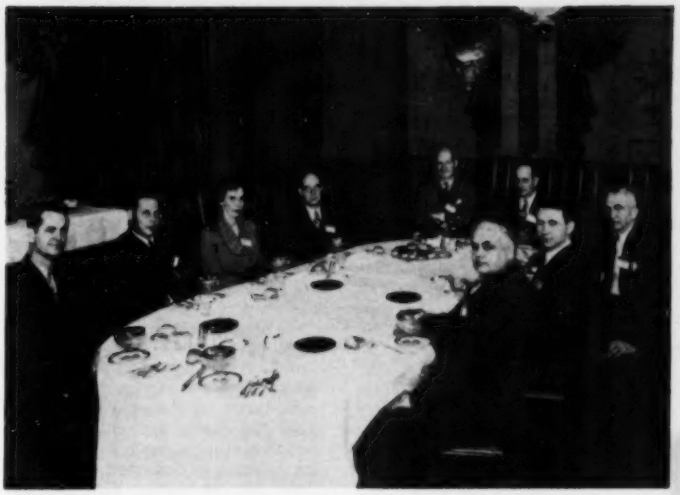
Chutes loading onto belts should be from two-thirds to three-fourths the width of the belt and be somewhat V-shaped, in order to form a crown on the belt load.

The chute should have tapered clearance in the direction of travel in order to prevent wedging of material.

Never load belts crosswise. Skirt boards are a necessary evil and should be used only when necessary; in many cases a chute can be redesigned so that a skirt board is not needed.

Mr. Dow said that each loading point should be regarded as a separate problem which can be improved in one way or another. In his experience, such improvements have lengthened belt life up to 40 percent. He further stated that few belts ever wear out; most of them meet an untimely death for one or more reasons. The greatest single cause, in his opinion, is edge wear, due to the belt being out of line and hitting obstructions. Such misalignment is due to several causes and should be corrected at once, because when the fabric is exposed, moisture gets in and the fabric soon begins to rot. For long life the cover must be kept intact. Any cut or bruise in a belt will also cause rotting. Proper preventive measures and frequent inspection are necessary. Stones adhering to the undersides of belts are a common cause of damage; they can be removed by a plow. Mr. Dow emphasized that a newly installed belt should be watched very carefully, especially when running light, as it is then that it is most likely to run out of line and be ruined before it has seen any service.

In the ensuing discussion it developed that the best material for skirt boards is a strip of pure rubber, not a piece of wornout conveyor belt. Where metal boards must be used, spring steel is regarded as best. Another producer told of using rubber-tired wheels alongside the belt to keep large stones from the crusher from falling off. Another urged vulcanizing the belts wherever possible, as the use of metal fasteners reduces the allowable stress and also promotes rotting of the fabric. He stated, however, that in most cases it is not possible to wait for vulcanizing, and metal fasteners are the only answer. The ends must be cut square with the centerline of the belt for best results. Where possible, these ends can be cut at a 45-degree angle, thus giving greater strength and causing the belt to ride over the pulleys and idlers more easily.



Accident Prevention Committee (around the table, starting at left): R. L. Moore, staff representative, Cement and Quarry Section, National Safety Council, Chicago, Ill.; E. F. Haberkern, production manager, Columbia Quarry Co., St. Louis, Mo.; Beatrice G. Gay, administrative assistant, N.C.S.A., Washington, D. C.; J. R. Boyd, administrative director, N.C.S.A., Washington, D. C.; J. R. Callanan, N.C.S.A. president, Callanan Road Improvement Co., South Bethlehem, N. Y.; C. A. Gustafson, chairman, Accident Prevention Committee and superintendent, Callanan Road Improvement Co.; F. J. Buffington, assistant to the vice-president, New York Trap Rock Corp., Newburgh, N. Y.; B. G. Woolpert, chief engineer, Granite Rock Co., Watsonville, Calif.; and T. W. Jones, engineer, New Haven Trap Rock Co., New Haven, Conn.

PREVENTIVE MAINTENANCE ROUNDTABLE

Cables One of the features of the meeting for operating men was the preventive maintenance roundtable on Monday afternoon, February 5. E. F. Haberkern, production manager, Columbia Quarry Company, St. Louis, Mo., presided. Wire rope was the first subject. Dexter Bullard, (New York Trap Rock Corporation), told how his firm had kept cost and performance records on various makes and types of shovel cables which showed wide variations in performance. On the basis of these results one make was decided on, and tests were made over a period of two years which showed that 900 hours was the safe operating life which could be expected. Cables are now removed at that time even if they still look good. In this way only 15 to 20 percent of the operating life of the rope is sacrificed, but costly failures are eliminated which would take a shovel out of operation for several hours. Cables are lubricated for maximum life.

Electrical Equipment Electrical equipment maintenance was discussed by Luther F. Miller, (New York Trap Rock Corporation), who said that his firm has between 25,000 and 30,000 hp. installed in its plants. A planned maintenance program keeps shutdowns at a minimum. The most effective preventive measure, he said, is the periodic inspection of motors and starters. When necessary, motors are cleaned out, dried out, spray varnished, and then covered with a plastic. Starting equipment is dismantled, inspected, and cleaned at the end of each season and is kept in as clean a place as possible. The grease in anti-friction motor bearings is replaced every 60 days of 8-hour operation. Time limit overload relays are used, as well as a trip relay which acts instantly if steel gets into a crusher. Mr. Miller emphasized that it is important to store spare equipment in a clean place and that an even temperature must be maintained to prevent sweating. His practice is to connect the motors every three months and run them for an hour or two.

According to Mr. Miller, officials

of his firm believe that inspection saves most operating delays. Rather than to bring in outsiders to do the inspecting, employees who are familiar with operating requirements are trained to do this work. A card system is kept on each motor, on which the trouble is recorded along with the work done, the date, and other pertinent information. A grease book is also kept with a page for each motor, the date, type of lubricant, etc. Mr. Miller added that their own trained men do much of their motor rewinding, as a better job is obtained.

Tires Little information was developed with respect to pneumatic tire maintenance, except that frequent and systematic inspection is necessary daily (or more often) to get maximum service from tires.

Spare Parts With respect to spare parts, Abe Goldberg (Allis-Chalmers Mfg. Co.) said that producers could help themselves and the manufacturers of equipment by periodic inspection to forestall breakdowns and by maintaining an adequate stock of repair parts. This will be even more important during the period of shortages ahead of us. It was also suggested that when a new item of equipment is purchased, a stock of emergency repair parts should also be bought.

Trailer Cables According to Ted Cooke (Lynn Sand & Stone Co., Swampscott, Mass.), trailer cables present a problem similar to conveyor belts: they are not only costly, but are also hard to get. When allowed to lie on the ground, they are subject to damage by rocks, cars, or trucks. He advised draping such cables over old barrels spaced 40 to 50 ft. apart, so that they will be out of the water and cannot be driven over. It was also stated that secondary blasting is a major cause of damage to trailer cables and that if cables are draped over wooden horses spaced 30 ft. apart, they will be comparatively safe.

Winter Repairs E. A. Heise (Columbia Quarry Co.), said that his practice was to devote two weeks to winter repairs, usually in March, when it is not so cold that the men will be tempted to loaf near a fire much of the time. In preparation for this shutdown period, care is taken to have an ample supply of stone in storage to meet demands, and the repairs are planned for in advance so that the necessary parts and supplies are available. Another operator of several plants has his superintendents submit a list of necessary repairs. The needed equipment and supplies are then obtained and an estimate is made of the cost. It has been found that costs stay close to the estimates, and usually about 90 percent of the planned work is completed.

Salvaging and Rebuilding In discussing salvaging and rebuilding, Nelson Severinghaus (Consolidated Quarries Corporation, Decatur, Ga.), described two types of salvaging by welding. One was the routine rebuilding of parts such as dipper teeth. He also described the building up of gyratory crusher mantles to compensate for the wear in concaves until the latter are entirely worn out, thus eliminating laborious zincking jobs. Also described was a method for reclaiming the through axles of shovels by cutting two worn-out axles in half and welding the two good ends together. He warned his listeners that, in trying to save scarce materials they should not waste equally scarce labor. Another producer mentioned the fact that equipment is now available for supersonically testing metal for flaws and that such items as crusher shafts can be inspected in place.

Good Housekeeping The subject of good housekeeping also received attention. Advantages pointed out were economy, safety, and the fact that more than ever the employee insists on a clean and comfortable place to work.

PANEL DISCUSSION ON OPERATING PROBLEMS

One of the outstanding sessions of the entire week in Cincinnati was a panel discussion of operating problems in which directly opposed points of view were presented on four basic subjects. The subjects covered in this forthright manner were *Jaw vs. Gyratory Crushers in Primary Crushing, Surge Piles vs. Close Coupled Plants, Single Surface vs. Multiple Deck Screens,* and *Drop Ball vs. Jackhammers in Secondary Breakage.* George D. Lott Jr., Palmetto Quarries Company, Columbia, S. C., presided at this session.

Jaw Crushers The case for jaw crushers was presented by W. Frank Alford, superintendent, Consolidated Quarries Corporation, Lithonia, Ga. All primary crushing at Consolidated Quarries, Mr. Alford said, is done with two jaw crushers—one a 48- by 60-in. double-toggle plate crusher of the Blake type, and the other a 30- by 42-in. single-toggle plate crusher with the swing jaw on an overhead eccentric shaft. According to the speaker, in selecting a primary crusher consideration must be given to the tons per hour of production required, the breaking characteristics of the stone, maintenance costs, and installation limitations as to head room.

For a given tonnage capacity, Mr. Alford stated, a gyratory crusher produces a smaller product than a jaw crusher, and has a smaller feed area which necessitates a feed from the quarry of finer broken stone. In addition, he said, stone that tends to break in slabs is not suitable to the jaw crusher. The speaker also referred to the need of greater clearance both above and below a gyratory crusher as disadvantages which must be considered in making a selection.

In Mr. Alford's experience, maintenance costs on jaw crushers have run considerably less than on comparable gyratory crushers. He said that the manganese plates in Consolidated's 48- by 60-in. jaw crusher are zincked, and they are not changed until completely worn out. The crushing plates are handled with a boom mounted on a flat-bed Mack truck. According to the speaker, this is much simpler than the equipment required to handle gyratory spindles, mantles, and spiders.

Mr. Alford closed his portion of the discussion with the statement that the manganese wear on an overhead eccentric crusher is greater than on a crusher with the swing jaw on a fixed shaft. In the case of the jaw, he said that the cost is only 0.3 cents per ton as compared with 1.5 cents per ton with the overhead eccentric type, and 1/3 of a cent per ton for the normal type.

Gyratory Crushers The rebuttal favoring gyratory crushers was presented by R. E. Sansom, manager of crushed stone operations for the American Limestone Company, Knoxville, Tenn. This speaker referred to the following as outstanding advantages of the gyratory crusher: far greater capacity for a given size of feed opening, even though the discharge opening is smaller; the fact that a feeder is not essential; the ability at times to feed one side when the other side is choked; simpler lubrication; less slabby discharge; lower maintenance costs over a long period of time; and the ability to start up under load. In connection with the latter claim, Mr. Sansom expressed doubt that it

would be possible to start up a jaw crusher under full load.

In his company's experience, Mr. Sansom said, operating costs with a gyratory crusher on hard dolomite range from 0.28 to 0.53 cents per ton, with 1/3 of a cent per ton representing a fair average. He added that in resurfacing concaves and mantles his company uses old zinc.

Following Mr. Sansom's remarks there was some discussion from the floor in regard to starting gyratory crushers under load. Several producers stated that in their experience it is not always possible to do this. An Allis-Chalmers representative said that in most cases, if there is a reversing switch with the drive motor, it should be possible to start under load. The point was also brought out that motor characteristics are of major importance in starting under load, and that a high-torque motor is best for this purpose.

Surge Piles The advantages of surge piles as compared with close-coupled plants were ably set forth by E. Lee Heidenreich Jr., consulting engineer, Newburgh, N. Y., who stated that during the last five years the crushed stone industry has gradually become conscious of the advantages that are gained by having a surge pile following the primary crusher, or in some cases, the secondary crushers. The minimum size of the primary crusher, Mr. Heidenreich said, is usually governed by the size of the dipper on the shovels in the quarry, and normally the primary crusher has a far greater capacity in tons per hour than the remainder of the plant. Thus, he pointed out, in a close-coupled plant, surges occur at the feed end and are gradually ironed out, but never completely, with the result that much equipment must be designed for a capacity much greater than the average productive rate of the plant.

When the primary crusher is close-coupled with the rest of the plant, the speaker believes that all quarry delays caused by crusher jams are inevitably reflected in reduced plant production, whereas by having a surge pile, with a feeder installed under the pile, the feed to the plant becomes uniform at the maximum plant productive capacity. With a known uniform feed to the plant, screens and conveyors can be designed for minimum capacity, whereas in close-coupled plants they must be designed for a maximum feed rate well in excess of the average rate.

Where a gyratory crusher is used as the primary crusher, Mr. Heidenreich said, the surge pile can always be located between the primary and secondary crushers, since the product of the gyartory crusher is of such size and shape that it will readily flow to a feeder. When a jaw crusher is used for primary crushing, in many types of stone the product may be large and slabby and consequently difficult to feed from a surge pile. When this condition exists, Mr. Heidenreich believes that in most cases it is best to have the jaw crusher product pass over the scalping screens, with the oversize going to a secondary crusher, and from there to a surge pile.

In the speaker's opinion the capacity of a surge pile should be equal to a minimum of 16 hours of plant operation, which should allow up to 48 hours of plant operation by using a bulldozer to augment live storage. The gain in production resulting from the use of a surge pile, Mr. Heidenreich said, has been reported at 10 to 20 percent by various operators.

In the layout of a new plant, Mr. Heidenreich pointed out, the additional cost of the tunnel, feeder, and conveyor required in connection with a surge pile is offset by the reduced cost of other conveyors and screens throughout the plant. He added that in a new plant it is good policy to provide space for the installation of additional screens, and to provide for increasing the capacity of conveyor belts by designing them originally for operation at low speeds.

As additional advantages of surge piles the speaker mentioned the ease of operating on a 2- or 3-shift basis, and particularly of recrushing for small sizes when the quarry is not in operation. He also pointed out that in some plants it has been found that large storage in the surge pile decreases the amount of finished stone that must be stockpiled, whereas in close-coupled plants equipment must be provided to take all of the stone that passes through the primary crusher and reduce it to the various sizes.

Close-Coupled Plants A. W. Heitman, general superintendent of Inland Lime and Stone Company, Gulliver, Mich., continued the discussion of surge piles *vs.* close-coupled plants by pointing out that the problem of relative advantages is purely academic, since layouts must be designed to meet specific requirements.

In the design of any continuous processing plant, Mr. Heitman said, one of the important considerations is to balance the capacities of the various component parts of the operation. Although excess capacity is nice to have, this luxury, in Mr. Heitman's opinion, is usually denied to the plant operator by the ever-present need to keep costs down. This, he added, applies to both initial cost and operating costs. Each piece of equipment, according to the speaker, must be adequate to handle the required peak loads without excessive maintenance or shutdowns, but extra capacity beyond this cannot be justified unless it pays its way on the cost sheet.

Mr. Heitman believes that it is a fallacy to suppose that a surge pile can create balance between the successive stages of a continuous operation. There must be a steady flow through the entire system, he said, and the greatest economy is achieved only through closely coupled and well matched units.

At his company's Port Inland plant, Mr. Heitman said, limestone is crushed and sized at the rate of 1,000 t.p.h. 24 hours per day, through 14 successive operating units, without the benefit of surge bins or surge piles, and each piece of equipment is operating continuously above 90 percent of peak capacity. A surge bin at any point in this system, the speaker said, would serve only the function of a chute to transfer material from one operating unit to the next.

In Mr. Heitman's opinion, it is not possible to take a position categorically in favor of or against the use of surge piles in plant flow sheets, and he concedes that there may be a number of useful applications, particularly where the recovery of the material from the quarry, and its treatment in the plant, cannot be synchronized. In closing, however, he emphasized that surge bins take up space and are costly to build and to operate.

Single Decks F. J. Buffington, assistant to the vice-president of New York Trap Rock Corporation, Newburgh, N. Y., opened the discussion of single-surface *vs.* multiple-deck screens. The single-deck screen, Mr. Buffiington said, is inherently most efficient from the standpoint of both design and performance. A second deck is usually not over 85 percent efficient, and a third deck only about 75 percent efficient. Furthermore, he said, the lower decks of multiple-deck screens have a tendency to blind, and it is difficult to replace the screen cloth. Single-deck screens in the plants of New York Trap Rock, Mr. Buffiington said, stay in service for many

years without developing bearing troubles, whereas the bearings of multiple-deck screens wear out relatively soon.

Multiple Decks The case for multiple-deck screens was presented by Nelson Severinghaus, vice-president and general manager of Consolidated Quarries Corp., Decatur, Ga. Mr. Severinghaus conceded at the outset that the previous speaker had a good technical argument, but he pointed out that the problem is to a large extent a matter of economics. He called attention to the fact that although the single-deck screen may well do a more efficient sizing job, the multiple-deck screen is far more efficient from the standpoint of cost.

Mr. Severinghaus dismissed the problem of blinding with the statement that it is not a factor in selection. In regard to the claim of impaired efficiency on the lower decks, he expressed the opinion that if the throw is ideal for large-sized screens, a good job will usually be done on smaller-sized screens. He referred to the additional difficulty of changing screens as a comparatively minor problem, and pointed out that it is just one of the many things that must be tolerated in order to hold costs down.

Multiple-deck screens, Mr. Severinghaus said, require far less accessory equipment, such as motors, belts, pulleys, bearings, and conveyors, than single-deck screens, and their use results in a compact plant which is easier to supervise, and in which repairs are centralized. Space, he pointed out, is almost always an important factor. He expressed the opinion that about 85 percent of all vibrating screens are sold for installation in existing plants, most of which lack the space required for single-deck screens and the additional auxiliary facilities which they require.

Drop Ball John Kawaske, Callanan Road Improvement Company, South Bethlehem, New York, reported briefly on his company's experience with drop ball operations. The use of the drop ball, Mr. Kawaske said, has reduced Callanan's jackhammer force from six men to only three, and at the same time has resulted in less handling of supplies, reduced power consumption, and reduced blacksmith shop operations. Expenditures for blasting fuse, caps, powder, and drill steel have also been reduced.

Although it is impossible to handle all secondary breaking with the drop ball, Mr. Kawaske said that the company has studied comparative costs, and has found a net saving of 2½ cents per ton by using the drop ball in combination with jackhammers, as compared with using jackhammers alone. In reply to questions from the floor, the speaker stated that his compnay uses a 500-lb. pear-shaped drop ball, and that only one accident has occurred as a result of drop-ball operations. This mishap, in which a flying stone struck a truck driver 150 ft. away from the crane, happened at the outset, and the possibility of recurrence has been largely eliminated by staggering the operations of the drop ball with other activities in the quarry.

Jackhammers M. Bovee, general superintendent of the General Crushed Stone Company, Easton, Pa., described his own experience with the drop ball, going back as far as 1909. In that year, Mr. Bovee said, he operated a drop ball in a quarry in Pennsylvania using a stiff-leg derrick and a hoist. The stones to be broken were dragged under the drop ball at the point where it was hoped the ball would hit, but Mr. Bovee admitted somewhat ruefully that there were just about as many misses as there were hits.

In 1911, Mr. Bovee continued, the first jackhammers were placed in service. These were operated from steam-driven air compressors. He pointed out that since that time many improvements have been made in secondary drilling equipment and in air compressors. He conceded that the drop ball is at times a useful tool in quarry operations, but he pointed out that improved blasting techniques have done much to reduce the total amount of secondary breaking required in most quarries. In the speaker's opinion, obtaining better breakage through primary blasting is much the best solution to the whole problem.

Shaped Charges Although not on the agenda for discussion, brief mention was made of shaped charges during the operating session. One producer referred to the results obtained in experimental operations in his quarry as "miraculous". Large blocks of stone, he said, are broken into pieces which have no dimension over 12 in., and this is accomplished without producing fines, or causing small particles to fly.

MANUFACTURERS' DIVISION

The Manufacturers' Division of the National Crushed Stone Assn. held its annual meeting at a luncheon on Tuesday, February 6. A welcoming address was made to the large and representative group of members by J. Reid Callanan, president of N.C.S.A. A feature of this meeting was the tribute to past chairmen which was presided over in his inimitable fashion by M. B. "Mike" Garber (Thew Shovel Co.). Each of the 12 living ex-chairmen of the division was presented with a gavel suitably inscribed to commemorate the occasion and the service he had performed for the division. The eight who were present to receive these mementos personally were: Abe Goldberg, 1932-33 (Allis-Chalmers Mfg. Co.); Max S. Lambert, 1937 (Hewitt-Robins, Inc.); Roy Wills, 1939 (Thew Shovel Co.); J. Harper Fulkerson, 1941-43 (Cross Engineering Co.); Milo A. Nice, 1944-45 (Hercules Powder Co.); J. B. Terbell, 1946-47 (American Manganese Steel Division); Cottrell Farrell, 1948-49 (Easton Car & Construction Co.); and last, but not least, Mr Garber himself, who presided in 1926. The four living ex's not present were A. F. King (now publisher of a construction magazine on the Pacific Coast), H. M. Davison, C. S. Huntington (Link-Belt Co.), and Fred Braun (W. S. Tyler Co.).

J. Craig McLanahan (McLanahan & Stone Corp.) was re-elected chairman of the division for 1951. Wayne W. King (W. S. Tyler Co.) was made vice-chairman, along with Irwin F. Deister (Deister Machine Co.) and B. R. Maloney (E. I. Dupont de Nemours & Co.). Messrs. McLanahan, Callahan, Deister, Farrell, Maloney, and King form the executive committee, and Farrell, Maloney and McLanahan represent the division on the board of directors of N.C.S.A. The four new members of the division board of directors are: C. R. Dodge (Northwest Engineering Co.), H. W. Newton (Barber-Greene Co.), L. A. Rhodes (Jeffrey Manufacturing Co.), and I. A. Trainor (Taylor-Wharton Iron & Steel Co.).

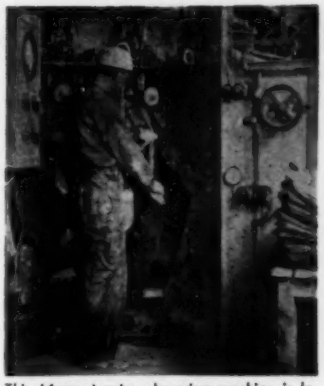
Chairman McLanahan gave a brief but inclusive report in which he mentioned his recommendations to the N.C.S.A. board that in the future in exhibit years more time be allotted in the program for producers to attend the exhibits and that the registration desk be on the same floor with the exhibits. Wayne W. King, as chairman of the membership committee, reported the addition of eight new members for a total of 97 in the division.

Skanska Cement

(*From page* 89)

The three Unidan clinker mills, each driven by a 1,050-hp. motor, are located in this same mill department. The clinker, gypsum, and other materials are conveyed to hoppers above the Unidan mills in a way similar to that used in handling the limestone in the primary mills.

The Unidan mills have an internal water cooling system which is put into operation when the temperature in the mill exceeds 100 deg. C. On account of the high evaporation heat of the water, the necessary cooling is obtained with the minimum of water. To carry through the process, it is necessary that the temperature be just over 100 deg. C. Materials to be ground in the various mills in the factory are fed to them by Pendan feeding devices which record the time rate of feed. These devices are quite valuable for the working control. The various mill units in the factory are also supplied with an electric ear, the "pholaphone," which reacts on the changing sound when the mill is fed with incorrect amounts of material. The "pholaphone" transmits impulses from these sound variations to a signal board.



This 14-spout rotary bagging machine is located in the distribution center in Stockholm.

The cement factory consumes about 35,000,000 kw.-hrs. per year. Power lines run to the main transformer station of the plant, which has two transformers of 6,000 kv.-a. capacity each. This station feeds ten substations within the plant itself.

Cement Storage The finished cement is transported pneumatically by three Fluxo pumps through three parallel 5-in. pipelines to two cement silos at the harbor. These have a combined capacity of about 14,000 tons. The bottoms of the silos slope slightly and emptying is accomplished by introducing air into the cement through pneumatic Fluxo channels installed in the silo bottoms. A small packing plant for local deliveries is located adjacent to these silos.

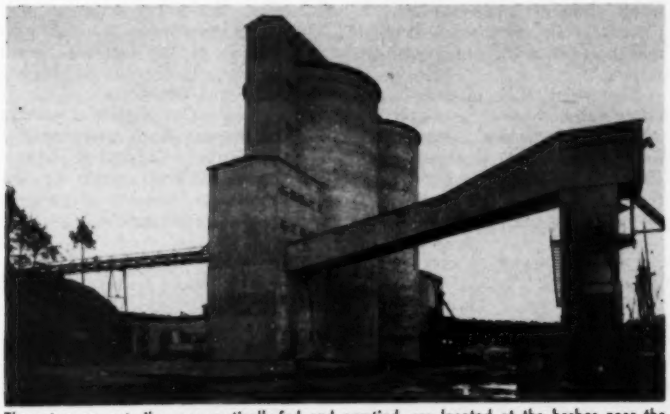
Shipping and Receiving The harbor of the factory at Fallnaskiven is equipped with a 200-m. long concrete pier. It is here that the coal, gypsum, and other materials necessary for the manufacturing process are received. Unloading is done by a 7-ton rocker crane with a 14-m. swing radius and belt conveyors which transport the materials to storage. A large warehouse for receiving and storing items such as machinery, etc., was also erected at the harbor-site.

Bulk Transportation As mentioned before, the main object in constructing the plant at Stora Vika was to serve the big Stockholm market nearby. As a result the main portion of the cement is shipped in bulk to the distribution center at Stockholm. This transport takes place in one of the company's two ships, the *Vika I*, which has been equipped with two large cement tanks and a completely automatic system for loading and unloading. The loading and unloading operations are handled by a single machinist operating the automatic system.

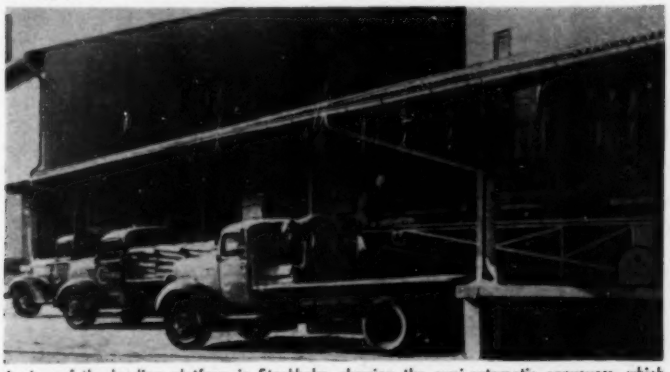
The *Vika I* carries 1,800 tons on each trip. Loading time at Stora Vika is about 8 hours and is expected to be reduced to about 5 hours in the near future. The cement is brought aboard by a vertical pipe and distributed in the hull by five worm (screw) conveyors with chutes. At Stockholm unloading is done in 10 to 12 hours by chain conveyors—one at the bottom of each cement hold—which convey the cement to vertical elevators amidships. From these elevators the cement is carried by a transverse screw conveyor into the receiving apparatus on the pier.

Both loading and unloading take place in enclosed chutes so that the whole system works free of dust. Air that is carried along with the cement during loading is discharged through

(*Continued on page* 108)



These two cement silos, pneumatically-fed and emptied, are located at the harbor near the plant proper. Their combined capacity is 14,000 metric tons. In the background is the small packing plant for local consumers.



A view of the loading platform in Stockholm, showing the semi-automatic conveyors, which provide very rapid loading with the minimum of manual labor.

Making the Safety Program Work

How the Lehigh Portland Cement Company keeps personal protective devices on the job

By STANLEY C. HERBINE
Industrial Sales Manager
Willson Products, Inc.

A COMMON remark of safety engineers is—"Sure, we have a safety program. But how do you make it work, human nature being what it is? Half the time the men's goggles are pushed up on their foreheads, and respirators are worn like beads around the neck. Or else they're hung on a hook. How do you get the men to *wear* their equipment?"

It can be done. And as proof, let's take a look at the Lehigh Portland Cement Company. This firm has 14 plants in 11 states. The Fogelsville, Pa., plant employs about 270 men and is running at top production capacity. Yet it has currently passed more than 1,400 consecutive days without a lost-time accident. And at the Union Bridge, Md., plant, the safety record stands at more than 2,200 consecutive days without a lost-time accident. That's more than six years of safe operation—in an industry which has many potential hazards. To keep the men working safely, the possibilities of falling or flying rock or metal, dust from crushing and grinding, and other hazards must be controlled.

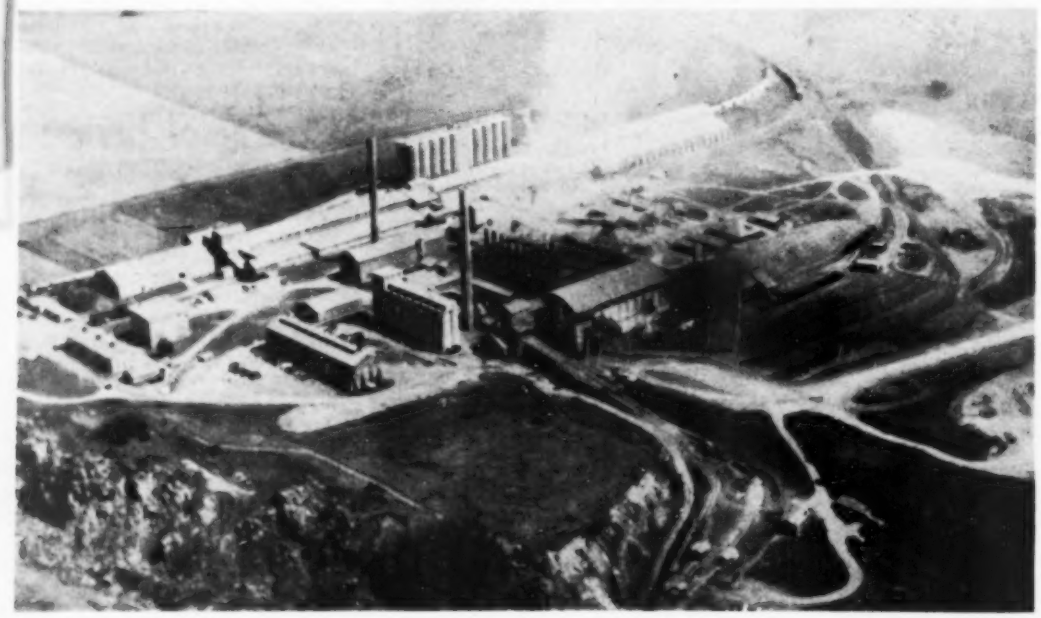
To find out how the company achieved this outstanding record, we visited the Fogelsville plant and talked with the plant manager and plant engineer. They told us that the plant is completely equipped with all manner of safety devices—from guards on machinery to personal protective equipment. More than seven different styles of respirators and goggles are worn constantly, hard hats are used for some jobs, and safety shoes are "musts".

"If you'd go through the plant at any time, you'd hardly find half a dozen people not wearing their safety equipment. I'd say that 95 percent of the men wear them all the time," the plant engineer declared.

The policy back of making the safety program work is simple but effective. It consists essentially of four things: (1) clear-cut safety objectives, (2) a sincere desire on the part of executive management to provide practical incentives for its operation, (3) a constant and never-ending effort on the part of operational management to build and sustain a feeling for safety, and (4) placing the responsibility for safety on the men themselves. Management stands back of the plant's fine safety program, but does not take credit for it.

SAFETY OBJECTIVES AND ORGANIZATION

The primary objective is "a physical environment in which work will be done with the least possible exposure to accident or health and an organization of people trained and alert in safe work methods". To accomplish this objective, the Fogelsville plant has set up a General Safety Committee, whose functions are to inspect, to recommend improvements, and to carry on educational programs. Maintenance of interest in the safety program is a basic requirement for its success and a function of the General Safety Committee. This group is divided into sub-committees, each of which is responsible for a certain portion of the program. Each sub-committee holds meetings as necessary, inspects as necessary, and reports at the monthly safety meeting on progress and new recommendations. Sub-



The Fogelsville, Pa., plant of the Lehigh Portland Cement Company has passed more than 1,400 consecutive days without a lost-time accident.

This green safety cross at the Fogelsville plant is a tangible reminder of the safety program. For each day worked without a lost-time accident, a green bulb is inserted and lighted.

161 DAYS SINCE LAST LOST TIME ACCIDENT
365 DAYS OUR GOAL
RED LIGHT LOST TIME ACCIDENT
AMBER LIGHT BE MORE CAUTIOUS
GREEN LIGHT ACCIDENT FREE DAY
LETS KEEP THE GREEN LIGHT BRIGHT

This novel way to dramatize safety originated at the Mason City, Ia., plant. The "green light" of safety burns longest in plants where all personnel work together to keep the program going.

committees are as follows: plant inspection; housekeeping and sanitation; protective equipment; fire, first aid and accident investigating; and publicity and education.

The General Safety Committee is headed by the Fogelsville plant manager as chairman. Working with him and with all safety committees in all plants is the Department of Safety and Welfare. The men in this department operate from central offices in Allentown. They tour the various plants, provide aid and assistance where needed, attend the monthly safety meetings, help in the operation of the program, and tie together the safety operations of the various plants, reporting ideas and suggestions developed by one plant to others in the company.

DUTIES OF COMMITTEES

Each sub-committee has set up a standard of duties as a guide to its efficient operation. The two committees which are most directly concerned with the use of protective equipment are the protective equipment committee and the one on publicity and education.

Members of the protective equipment committee realize that if goggles, respirators, hard hats, and safety shoes are to be worn, they must be comfortable. The committee has set up specific methods for attaining this goal. First, one of their members studies the "conditions of any particular job in order that the protective equipment may be selected to provide minimum discomfort or inconvenience along with adequate protection. By knowing the objections of the men who should wear or use the equipment, a selection can often be made which will meet these objections". In actual operation, the men are allowed to select from several styles of goggles, and in some cases orders for special types of goggles are sent through. For example, Willson Products, Inc., safety equipment manufacturer of Reading, Pa., has supplied the plant with a composition cup cover-all goggle, with an inside protective mask of rubber to place against the face. This is not in the regular line, but has been made up as a special order to please several of the workers.

"It pays to do this," the plant engineer stated. "They'll wear the equipment if it's what they want."

"Of course," he added, "not all equipment is sent through as special orders. It's the exception rather than the rule. For example, look at these Willson safety spectacles with wire side shields and clear hardened lenses. They look almost alike. But you'll notice that the nose bridge is different. One has a saddle nose bridge which rests on the nose. The other has a high arch bridge with forehead bar. Both are standard equipment in the manufacturer's line, but the two different styles have been ordered to satisfy different workmen."

Another duty of the protective equipment committee is to see that

Fig. 1—Left: The rock drill operator in the quarry wears a complete set of safety clothing, including spectacles, shoes, and a hard hat.

Fig. 2—Right: Here a workman repairing an elevator protects his eyes from loose, flying metal with coverall goggles which have clear hardened impact-resistant lenses.

Fig. 4—At the final operation, where the finished cement is bagged in the packhouse, the operator wears safety spectacles with side shields.

the plant is kept well informed "with what protective equipment is available from suppliers and receive information on new developments." One of the committee members is assigned this duty as his part of the program. This means that the plant is constantly alert to new personal safety devices.

Third, the committee realizes that it must keep selling safety if it is to succeed in its objective of getting safety equipment worn. In this, it is helped by the publicity and education committee. This group keeps poster boards in good condition and attractive in appearance, selects monthly posters from the National Safety News illustrations, recommends educational programs, distributes magazines and safety literature, and plans the monthly safety meeting programs in advance so that the meetings are always constructive and interesting. The outline of committee standards reads: "A campaign is needed (or several campaigns) to sell the idea of using personal protective equipment."

Protective equipment committee members also realize that "selling safety" requires vigilance, tact, and friendliness; so the responsibility for selling safety directly to the men is put up to each department foreman. He is the one who comes in daily contact with the men and is in a position to see when safety practices are infringed. Often a friendly word from him will remind the worker of his negligence and remedy the situation.

Fig. 3—Furnaceman's goggles.

SAFETY EQUIPMENT

As might be expected with its liberal "comfort" policy, the plant has a complete line and varied types of personal protective equipment. Willson Products, Inc., is perhaps the largest supplier of respirators and goggles; Lehigh Safety Shoe supplies safety shoes; and the greater use of hard hats is now in the process of being "sold" to the employees. At present, the men are less con-

Fig. 5—A workman cleaning out a grinding mill in the coal mill wears a respirator for protection from finely pulverized coal.

Personal Safety Equipment for the Cement Industry

Department	Operation	Type of Equipment	Designation
Quarry	Drilling of rock with jackhammer to produce secondary blasting holes to bring rock down to size for crushing system	Coverall goggle—with deep eye cups, adjustable leather bridge, ventilated lens retaining ring and clear hardened lenses	Type CC60
		Safety spectacles with wire screen side shields, clear hardened lenses, saddle nose bridge, and industrial cable temples	(Fig. 1) Type F350 safety spectacles
		Hard hat	
Stone unloading station	Stone dumped into quarry car from truck and sent to crushing dept. If stones are still too large for machinery, they are broken with a sledge hammer.	Safety spectacles with wire screen side shields; round, flat hardened glass lenses; industrial cable temples, with removable plastic padding, and adjustable wire nose bridge	8150
Drying dept.	Burning off nuts in repairing breeching conveyor	Coverall type of goggle with composition cups and filter lens shade suited for light acetylene welding and cutting	Type CW60
Machine shop	Burning, metallizing, flame cutting		
Blending bins	Inspection and repair of broken cotter pins, bolts, etc., in elevator as part of maintenance program	Coverall goggle with composition cups and clear hardened lenses, adjustable leather bridge and 2-piece adjustable headband	(Fig. 2) Same type as above, but without filter lens.
Kiln room	To judge temperature of kilns. Goggles protect against eye injury from radiant rays.	Furnaceman's goggle. Blue filter glass in composition frame, with padded wire, skull-grip temples.	(Fig. 3) No. 1 Furnaceman's goggle
Pack house	Operating packing machine. Goggles protect against flying cement if paper packing bag breaks. Cement dust in eyes produces a burn which can be rather severe.	Metal frame safety spectacle with clear hardened lenses, saddle nose bridge, and perforated plastic side shields	(Fig. 4) Type BS 1 safety spectacles
Storage bins	Operation of electric scoop to transfer stored cement from bins to packing machine	Type 5 respirator with large filter area for easier breathing and adjustable headband for comfortable fit. Used as protection against dust.	(Fig. 5) Type 5
Coal house	Cleaning out choke in coal mill		
Tractor and truck drivers	Eye protection from dust	Plastic spectacle, having large, one-piece plastic lens, with integral nose bridge, rolled edges. Weighs less than an ounce.	(Fig. 6) Type F
Machine shop	Electric welding	Hand shield—Riveted vulcanized fibre shield, with Type No. 1 filter glass in metal glass holder	(Fig. 7) Type No. 1 hand shield
Machine shop	Grinder work, lathe work, and boring machine operations	Plastic face shield—8-in. plastic visor with woven sweatband and elastic headband. Other models have vulcanized fibre brow guard and adjustable fibre headgear.	(Fig. 8) Type V plastic face shield

scious of the value of hard hats than they are of the other types of protective equipment.

Machines have safety guards wherever possible, and personal safety equipment is worn all over the plant. The preceding table indicates what type of equipment is worn for various jobs.

OPERATION FOR SAFETY

At the plant a willingness on the part of the men to work safely is developed in many ways. There are safety awards, safety meetings, literature, stunts, bulletin board notices, special attention paid to new workers, readily available first aid, and an important vision testing program.

Safety Awards To substantiate its policy of standing back of the safety objectives, management provides practical incentives. Every man is eligible for a safety award if the entire group succeeds in establishing a no-lost-time safety record for a year. If the plant runs a year without any lost-time accidents, every employee is provided with a pair of safety shoes. Time is counted from the date of the last lost-time accident, in order to minimize discouragement if an accident should occur. This is the third year that safety shoe awards have been made in the Fogelsville plant, and for all practical purposes, it means that the company buys the men's safety shoes, just as it always supplies them with goggles and respirators.

Since safety shoe expenditures are a more costly item in the clothing budget than other personal protective equipment, the men try to win the safety shoe award. On the average, a pair of safety shoes will last the average employee for a year; but quarry workers find they need two or three pairs yearly. The practice of awarding safety shoes is in addition to other types of safety recognition. In July, 1949, the company recognized the contribution made by the employees toward a 1,000-day safety record at the Fogelsville and Union Bridge plants. Watches were requested, and each employee was presented with a "safety" watch, carrying on its face the inscription "Time to be safe, L.P.C. Fogelsville, 1,000 days." The award was made on company time at a ceremony attended by all plant members.

Fig. 8—Plastic face protectors are used for semi-hazardous jobs in the machine shop.

Fig. 7—A welding operator resurfacing nuts protects his face and eyes from the rays of the arc with a vulcanized fiber handshield and his hands with safety gloves.

Safety Meetings The company realizes that it is not the occasional recognition of achievement which produces results, but a constant day-by-day and week-by-week indoctrination of safety principles. The safety committees are constantly vigilant to find and report plant conditions which could be made safer at the monthly meetings. All committee members are in attendance at these meetings, as well as employees from various departments, on a rotational basis. The meetings are held regularly the second-to-last Tuesday of the month from 10:30 a. m. until 12. Since the meetings are held on company time, the men are paid for attendance. Even if they are not on the work shift at the time when the meeting is held, they receive their regular wage for the time spent at the meeting. Nothing is allowed to interfere with the regularity of the meeting, and punctuality is strictly observed. "Safety First" becomes more than just a slogan.

The programs are varied, and it is planned so as to be interesting and yet instructive. After roll call and reading of the minutes, each sub-committee reports on its activities during the month. The inspection committee reports on its investigation of the plant and whatever it may have found that is hazardous. The protective equipment committee points up the need for whatever improvements it may have found in equipment. Suggestions often come from the men themselves. They may say that a scraper has wooden handles which break, and perhaps something better can be found. Or the quarry shovel operator may suggest safety glass for his cab windows. Most of the suggestions from the men concern machinery improvement. These suggestions are carefully recorded and always acted upon.

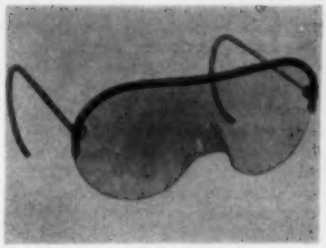


Fig. 6—Type F plastic spectacles.

The committee meeting program may include a movie on safety. Films are received from the Portland Cement Association's Accident Prevention Bureau once a month. Sometimes industrial films are shown, for example, the one put out by Corning Glass on the care which goes into making optical and safety glass, and its value for the user. Or there may be a speaker from the Lehigh Valley Safety Council, or from some other safety organization, who will talk on his experiences in accident prevention work. Most of these speakers are extremely popular because they are selected for their ability to meet the men at their level, to keep their talk practical, and to present it in an understanding, friendly way.

Safety Literature Fogelsville was one of the first plants in the organization to develop a safety program. It has been in continuous operation since 1913, when industrial accident prevention methods were first started by the Portland Cement Association, and when manufacturers first began making protective equipment. In addition to "live" safety committees and sufficient safety equipment, the plant utilizes many other types of safety promotion.

There is, for example, the house organ, a bi-monthly magazine called

The Lehigh News Conveyor, which emphasizes safety in every issue. The safety manager contributes a "scoreboard" to the issue, in which the safety standing of each plant is revealed. Sometimes the story is told of an employee who has saved his eyes through wearing his safety goggles on the job. Although the company has an excellent safety record, accidents do sometimes occur. A column entitled "How They Happened at Lehigh" mentions the type of accident that occurred, how it happened, and how it could have been avoided. This serves as a warning that "it can happen here" and is a forceful reminder of the misery that can be caused by carelessness and of the value of wearing safety equipment on the job.

Safety leaflets put out by the National Safety Council and by the United States Dept. of Labor are distributed to all employees regularly. In addition, safety bulletins are prepared by individual plants, so that the workers receive the company-wide house organ, national informative material, and safety material prepared at their local plant with their local needs in mind.

Notices are placed on each plant bulletin board regarding the plant's safety statistics. These include a monthly calendar, on which accident information is recorded for any day an accident may occur. Each plant bulletin board thus becomes a running safety record and an incentive to keep the record clean. The bulletin boards are also used to display colorful safety posters.

Sometimes a plant will come up with a *stunt*—an idea to dramatize safety and promote it in a novel way. These methods are always reported in the *News Conveyor*. For example, the Mason City plant originated the idea of a "Stop and Go" safety sign. The sign carries a real traffic light, with this slogan:

161 days since last lost-time accident
365 days our goal
Red Light—Lost-Time Accident
Yellow Light—Be More Cautious
Green Light—Accident-Free Day
Let's Keep the Green Light Bright

At the Fogelsville plant, one December, a large green-painted safety cross outlined with green lights was mounted above the plant's jumbo outdoor Christmas card billboard. For each day worked without a lost-time accident, a green light bulb was inserted and lighted. Another tangible reminder is the green cross safety flag, which is set up and flown on the flagpole just below the American flag until an accident occurs. Then it is flown at half mast for 30 days.

New Workers Special attention is given to the new worker, to be sure that he learns his job the safe way from the very beginning. The protective equipment committee at the Fogelsville plant recognizes that the new worker's earliest hours and days in the plant offer an opportunity that is priceless to impress the learner with safety principles. During this period he is more receptive and can be impressed more easily than later with safety teaching. He is taught the safety rules, with special emphasis on moving machinery. He is informed about personal protective equipment and safe dress, and provided with any such equipment required in his job. He is told how to get first aid and impressed with the importance of reporting even a slight injury. He is made to feel that the plant is striving to prevent accidents, and shown the part that he has in that effort. In short, there is a planned and active procedure to help each new worker develop safety measures from his first hour in the plant.

First Aid The first aid and accident investigating committee sees that first aid training is carried on periodically and reviewed as necessary. Every plant has employees who have been given a first aid training course. The first aid hospital is kept in proper condition, with adequate supplies. First aid equipment, such as stretchers, blankets, splints, etc., are properly placed throughout the plant and kept in condition for instant use. This committee also makes an analysis of injuries, in order that accident prevention measures can be directed at the most common sources.

Vision Testing An important part of the safety program is the vision testing. The company owns and maintains a vision testing machine. The assistant safety director is now making a 100 percent test of all employees in every plant with an Ortho-rater, a machine devised for testing of visual depth, acuity, and muscle balance in industrial situations. At present nearly 75 percent of the employees have been tested. Although this part of the safety program is not designed to develop safety consciousness in the men, it does show where defective vision may be causing unnecessary work hazards. Steps are taken to remedy the situation, either by transferring the worker to another department, where his vision is adequate for the job, or by correcting the visual deficiency with glasses.

No one doubts that this constant attention to safety is desirable. And the Lehigh Portland Cement Company's enviable safety record is due largely to the fact that everyone does pay attention to it.

The value and result of the safety program can be summed up in the words of the plant manager, who said, "Before 1913, when industry first became safety-conscious, the ambulance carted a man off to the hospital almost every day. Today we recognize the importance of personal protective equipment and the need for keeping it in use. Now, with the proper goggles, respirators, and safety clothing, and with our safety program, we have been running more than three years at this plant without a single lost-time accident."

Skanska Cement

(*From page* 103)

filters. The enclosed system also renders the loading and unloading independent of the weather or time of day.

Stockholm Distribution Center The distributing plant in Stockholm is located in an area taken over by Skanska in Lovholmen on the south side of Hammerbyleden near the Liljeholm bridge. A 100-m. long concrete pier is equipped with special conveyors which receive the bulk cement from the *Vika I*. Railroad tracks have been installed on the pier, permitting rail connection with the Liljeholmen station. Four concrete silos with a total capacity of about 28,000 tons of cement are located at the pier. This capacity is at present considered equal to the needs of the capital during the months when sea transportation may be interrupted by ice. In connection with the silos, the plant is equipped with a big 14-spout rotary packer and two smaller stationary packing machines. Most of the packed cement is discharged into trucks and railroad cars, but the plant is also equipped for loading seagoing vessels. In addition, there are facilities for loading bulk cement into trucks for transport to consumers of cement in this form. For loading the bagged cement to the trucks, the plant is equipped with automatic loading conveyors which project over the platform of the truck and recede gradually (by pushbutton control) as the platform is filled.

4 AT SPRINGFIELD SAND & GRAVEL CO. (ILL.) EAGLE WASHERS ASSURE PREMIUM MATERIALS!

1 All Material is pumped to "field" dewatering plant by means of Eagle Water Scalping Tank which removes excess water — concentrated material flows to Eagle Double Screw Unit which deposits washed pit run material on belt for conveying to processing plant.

2 Material passing vibration screen flows to an Eagle Double Screw Fine Material Washer-Classifier-Dehydrator producing two gradations of clean sand.

3 An Eagle Single Screw Coarse Material Washer — Dewaterer turns out clean gravel, from top deck of screen.

4 An Eagle Single Screw Coarse Material Washer — Dewaterer processes buckshot or torpedo sand from second deck of screen.

What Eagle Screw Units are doing for Springfield Sand & Gravel Co.'s practical and profitable plant, they can do for you. Fine material units are retaining fines even below 150 mesh and reducing moisture content so that residual water offers no difficulty in bin storage or belt stockpiling. Adjustable long weir can be raised to retain fines, lowered to flow off fines. Eagle builds the broadest line, has the most installations, more years of experience. You can bank on Eagle. Ask for Catalog 47 on Washers — 150 on Water Scalping Tanks.

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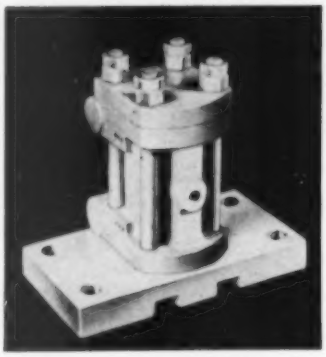
PIT AND QUARRY

● Hopper Vibrator

A "Quiet Type" pneumatic vibrator for hoppers, bins, shakeouts, core, and molding machines is being manufactured by the Cannon Vibrator Company, 1110 Power avenue, Cleveland 14, O.

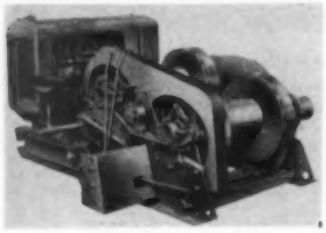
The machine has heavy pistons with



long strokes and no impact at the end of the stroke, a feature which is said to eliminate noise and breakage of end plates. Sizes are available from 1 to 4 in., operating on air pressures from 20 to 100 p.s.i.

● 8,000 lb. Line Pull Hoist

Extra capacity for hoisting heavier loads higher and faster is claimed for the "Frame-5" hoist now being produced by the Clyde Iron Works, Inc., Duluth,



Minn. The hoist is available in eight capacities with a single line pull of 8,000 lbs.

The Frame-5 is available with gasoline, diesel or electric power, and line speeds from 174 to 279 f.p.m. Safety engineering features are said to permit operators to spot loads more accurately, thus cutting material handling costs and operator fatigue.

An exclusive feature cited by the makers is a chain tightening device that permits adjustment of the chain without removing the chain guard. The guard itself is designed with an oil-tight seal, yet offers accessibility for servicing.

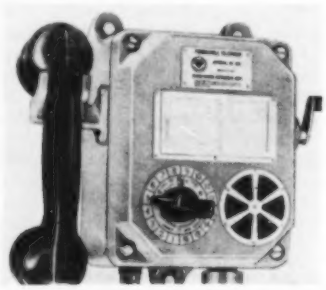
High-carbon steel shafts, electrically-welded steel frames, and machine-cut gears are used for extra strength and durability on these heavy-duty hoists.

A one-drum bull wheel swinger can be attached to any 2- or 3-drum Frame-5 hoist. The complete unit is mounted offside to permit unobstructed rope clearance from any drum. A roller-bearing thrust screw provides easy swinging operation with less wear and maintenance.

● Sound-Powered Telephone

A telephone set powered by the sound of the voice and suitable for construction jobs, mines, mills, manufacturing plants, and dusty or noisy places is being made by the United States Instrument Corporation, Summit, N. J.

The set may have 2 to 24 instruments and will function up to 30 miles in distance. A unique principle of utilizing the sound waves of the voice to generate electricity is employed to activate the circuit. The voice causes fluctuations in the magnetic circuit of the transmitter which creates an alternating current. This current, too small to be measured by ordinary electric instruments, is transmitted to the receiver where sound waves are created, reproducing the speaker's voice. According to the manufacturer,

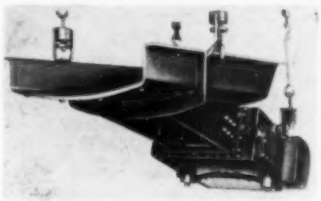


speech is transmitted clearly and distinctly without any distortion because all of the static noises usually associated with telephones are eliminated. It is claimed that since the magnetic properties of the Alnico magnets which form the heart of the instruments remain virtually constant, the telephones have an unlimited useful life. Non-corrosive, shock- and vibration-proof materials are employed in their construction.

No outside current from batteries or generators is needed. A switch on the terminal box of each instrument makes possible the calling of any other instrument without the need of a switchboard. The entire system is readily portable, and individual instruments can be easily moved.

● Dust-Tight Vibratory Feeder

Syntron Company, 385 Carson Avenue, Homer City, Pa., announce the addition to their standard line of heavy-duty "Vibra-Flow" vibratory feeders of a dust-tight model on which the work-



ing parts—the leaf springs, the armature, and the core—are covered by gasket-sealed plates bolted to the magnet casting, as illustrated.

By enclosing these parts, protection is obtained against clogging by excessive supply hopper spillage or heavy dust conditions, making the feeder suitable for Class 2 group installations.

● Overload Release

A mechanical overload release for slow-speed machinery such as elevators, conveyors, mixers, blenders, etc., is being made by The American Pulley Company, 4200 Wissahickon Ave., Philadelphia 29, Pa.

The device protects against heavy shocks, impact, and choke-loads. It is installed without alterations to the drive. The overload release automatically disengages and is easily reset by the operator. It can be actuated many times without replacing parts.

B.F.Goodrich

Double nylon shock shield lengthens tire life

THE tires in this picture have been in daily quarry service for the Tyrone Rock Products Company of Tyrone, Georgia, for more than two years. And it's estimated that they are good for at least two more!

Four trucks such as that shown, haul 8-ton loads of granite to the crusher, travelling over sharp-edged rock. Tire service has been more than satisfactory.

The tread of the tires used, B. F. Goodrich Universals, is specially compounded to resist cutting. And the tread provides sure traction, forward or backward.

All B. F. Goodrich off-the-road tires have bruise protection in the form of a *double nylon shock shield* . . . layers of nylon cord built between the tread and body plies. Under impact, the strong, elastic nylon shields the cord body, distributes impacts and strains.

Only B. F. Goodrich gives you the added protection of the patented nylon shock shield; only B. F. Goodrich gives the added savings of (1) greater average mileage (2) less danger of tread separation (3) greater bruise resistance (4) more recappable tires.

There's a specially designed type and tread design for every need. See the B. F. Goodrich retailer. And specify B. F. Goodrich tires on new equipment. You can get nylon shock shield protection at no extra cost. *The B. F. Goodrich Company, Akron, Ohio.*

RESEARCH KEEPS
B.F.Goodrich
FIRST IN RUBBER

PROVED BETTER... because they WORK BETTER!

MORRIS DREDGING PUMPS

In almost any dredging operation . . . they give greater performance at lower maintenance cost

● Purposely made for high vacuum, Morris Pumps dredge to greater depths and give up a higher percentage of sand, gravel and other abrasive materials.

● The proper relationship between shell and impeller designs produces smooth, easy flow of materials . . . without eddies, turbulence or excessive friction losses. This feature alone reduces wear, abrasion and power consumption.

● When long service finally requires renewal of a part, replacement on the Morris Dredging Pumps can be made easily, quickly and economically . . . *with only slight interruption of service.*

Morris Will Build a Dredge for Your Particular Job . . .

● All the components of the dredge—hull, rigging, hoist, spuds, ladder, ladder head, and cutter will be designed and built for the individual type of deposit and service you require. All excavating and auxiliary pumps are of the famous Morris Centrifugal type . . . driven by electric, Diesel or steam power, according to the needs of your job.

Morris Dredges Are Custom-Built . . . Yet Moderate in Cost

WRITE TODAY! Send for Free Bulletin No. 177. It illustrates and describes a wide range of dredges.

MORRIS MACHINE WORKS
Baldwinsville, N. Y.
Branch Offices in Principal Cities

MORRIS CENTRIFUGAL PUMPS

● Tractor Changes

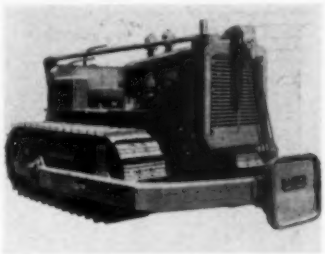
Seat-mounted fuel tanks with increased capacity to 30 gallons have become standard equipment for "Cat" D4 tractors, the Caterpillar Tractor Company has announced. The current fender-mounted fuel tanks will be offered as optional equipment.

In addition to the new seat-mounted fuel tank, several other revisions will be made. These include new heavy-duty, rigid, plate-type fenders free from obstructions to provide room for installation of attachments; new operating levers and controls for the clutches, gear shift, and brakes; and an out-of-sight tool box under the seat.

According to the announcement, these new features will result in better visibility and riding comfort for the operator and will permit the tractor to operate for longer periods of time without refueling.

● Scraper Pusher

A pusher designed for use with the Allis-Chalmers "HD-19" tractor is being made by the Baker Manufacturing Company, Springfield, Ill. The unit may be teamed with practically all types of scraper push plates; it can be obtained as a complete unit or as an attachment.

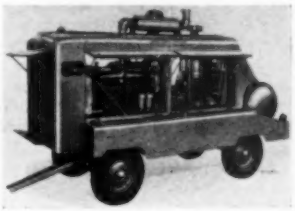


An advantage claimed for the pusher is its floating action with the scraper block. This sturdy reinforced pusher weighs approximately 725 lbs.

● Portable Compressor

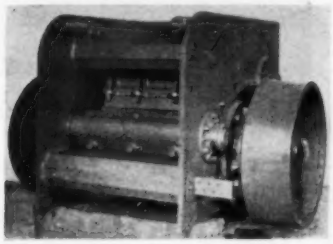
The new "Gyro-Flow" 600 air compressor manufactured by Ingersoll-Rand Company, Phillipsburg, N. J., features a new design in portable compressors. The compressing unit is a rotary, two-stage, multiple-vane type that is oil-cooled and delivers 600 cu. ft. of air at 100 p.s.i.

By eliminating pistons, connecting rods, valves, clutch, and many other parts necessary on the piston type compressor considerable savings are said to be effected in weight, maintenance, and noise. The machine is powered by a G.M. 2-cycle diesel engine.



● Dual Jaw Crusher

A new type of crusher, known as the Anderson dual jaw crusher, featuring two opposed crushing compartments, both actuated by a single movable pitman carrying two opposed jaw dies, is



offered by the Highway Machinery Company, Waukesha, Wis.

In operation the crusher is fed from a double-deck screen, plus 3-in. material going to the primary jaws and minus 3-in. to the secondary jaws. As both movable jaws are actuated by the one eccentric, crushing is continuous and output capacity is high at low hp. consumption, the manufacturer points out. Because of the location of the eccentric with relation to the movable jaws, a nearly circular motion is imparted to the jaws at the discharge end, resulting in rapid material flow without compaction and with the minimum of wear on the jaws.

The crusher illustrated has a 10- by 36-in. primary opening and a 5- by 36-in. secondary opening. It has a normal capacity of 50 tons through a 1-in. screen.

Incorporated in the portable plant illustrated is this crusher, a set of 16- by 20-in. (or 24- by 20-in.) rolls, a 4- by 9-ft., 2½-deck screen, and 30-in. conveyors, and is powered by a 100-hp. engine. This plant has a capacity of 125 to 150 t.p.h. through a ¾-in. screen.

● A.C.-D.C. Coated Electrodes

The Stoody Company, Whittier, Calif., has added a.c.-d.c. coatings to its line of hard-facing alloy electrodes formerly limited to d.c. application only. The regular d.c. electrodes will continue under the established names and "A.C.-D.C." will be added to distinguish the new ones. The following characteristics are cited by the Stoody Company.

A.C.-D.C. Stoodite has slightly lower penetration than the regular coated Stoodite; Rockwell hardness is C 56; highly resistant to abrasion, pitting, and galling; polishes under abrasion.

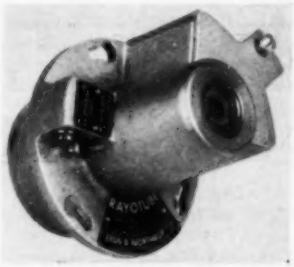
A.C.-D.C. Tube Borium contains uniform particles of tungsten carbide (borium) in mild steel tubes; has a faster deposition rate and more stable arc than standard Tube Borium; has high abrasion resistance; especially suitable for earth-moving equipment.

A.C.-D.C. Borod is similar to Tube Borium, but with finer particles; has outstanding wear resistance; suitable for earth-working and scraping equipment, particularly on thin or small sections.

● Detector Tube

A new "Rayotube" for use with all "Micromax" and "Speedomax" instruments is announced by Leeds & Northrup Company, 4934 Stenton Ave., Philadelphia 44, Pa.

The new detector tube is said to be



especially suitable for slab furnaces, open-hearths, kilns and other extreme operating conditions. The tube is hermetically sealed at lens, window, and leadwires to keep out dust and gases. The Rayotube is designed to withstand high temperatures up to 350 deg. F. and fluctuating housing temperatures.

● Multi-Purpose Grease

A multi-purpose grease of high heat and cold resistance, water repellancy, and oxidation stability is being marketed as "Cosmolube" by E. F. Houghton & Company, 303 W. Lehigh ave., Philadelphia 33, Pa. Cosmolube is designed to lubricate many difficult spots and may be the only grease needed in many plants. The makers state that it clings to metal surfaces, and lasts exceptionally well even under severe conditions.

NOW-MORE THAN EVER BEFORE!

Rebuild WORN Hammermill Hammers

Quickly and Economically with . . .

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Manganese-Nickel Steel

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- ELIMINATES BUYING EXPENSIVE NEW HAMMERS
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FOR STILL LONGER LIFE

on overlay of SEACO hard-surfacing WELDING ELECTRODES allows the steel to workharden before the wear hits it.

FREE—Helpful Literature on the Repair of Quarry, Mining and Contractors' Equipment. WRITE TODAY!

●

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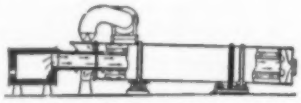
STULZ-SICKLES CO.

SOLE PRODUCERS

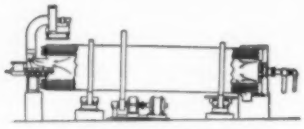
93 N. J. Railroad Ave., Newark 5, N. J.

NEW DEVELOPMENT
IN CONTINUOUS ROTARY DRYERS

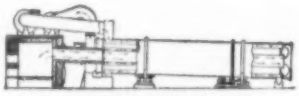
You are looking at the interior of a "Ruggles-Coles" Class "XH" Single Shell Rotary Dryer designed especially for continuous drying of sticky materials. Note heavy chains for "knock-out" of materials behind lifting flights at feed end.



Class "XA" Double-Shell Direct-Heat Dryer



Class "XC" Rotary Steam Tube Dryer



Class "XB" Double-Shell Indirect Heat Dryer

Class "XF" Single-Shell Direct-Heat Dryer

Write for Bulletin 16-D-8, describing the complete line of "Ruggles-Coles" Rotary Dryer, Kilns and Coolers, built by Hardinge.

HARDINGE
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YORK, PENNSYLVANIA—240 Arch St. Main Office and Works

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HIBBING, MINN. • 2016 First Ave.
TORONTO 1 • 200 Bay St.

● 18 GPM Transfer Pump

An air-operated transfer pump weighing 15 lbs. and claimed to be capable of delivering 18 g.p.m. at an operating pressure of 150 lbs., is a product of the Gray Company, Graco Square, Minneapolis 13, Minn.

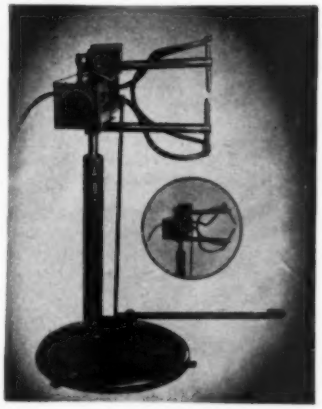
The new "Fast-Flo" pump can handle

the transfer of lubricants, coolants, and many other fluid and semi-fluid materials. It fits all drums with 2-in. openings and has a regulating valve for control of the flow.

● Pedestal Rocker Arm Welder

A new, simple spot welder for general use has been announced by Universal Welder Corporation 763 Carnegie Avenue, Cleveland 15, O. The welder is of the rocker arm type, with reversible arms for vertical and slanted electrode holder mounting. The unit is rated 5kv.-a., 220 volt, 60 cycle, 50 percent duty cycle in accord with R.W.M.A. practices and can make welds in sheets from 2 No. 28 gauge to 2 No. 20 gauge steel.

Throat depth may be varied from 3 in. to 15 in. by adjusting the arm length. Arm spacing may be adjusted also and the arms can be swivelled to get into unusual places. Available with both air-cooled and water-cooled point holders and electronic timers.



● Electronic Control

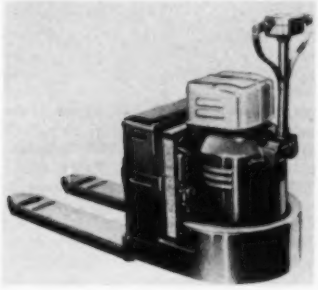
An electronic control for regulating temperature, chemical concentration, or gas analysis is the new "P.A.T. '50" announced by the Leeds & Northrup Company, 4934 Stenton ave., Philadelphia

44, Pa. The control features rate action in an electrically-actuated control. Rate action is the response of the control mechanism to rapid changes in the controlled process; the greater and faster the change, the greater the response of the control mechanism. The control is designed for use with "Micromax" or "Speedomax" recorders and L&N valve drive mechanism. The control has no moving parts; all of the action is by means of electronic circuits.

● Electric Pallet Truck

Towmotor Corporation, Cleveland 10, O., presents a compact, powerful pallet-type truck, built to handle loads up to 4,000 lbs.

The Model "W" has a new contactor panel, positive-action brake, dead-man



control, improved differential, and all-rubber dual trailer wheels.

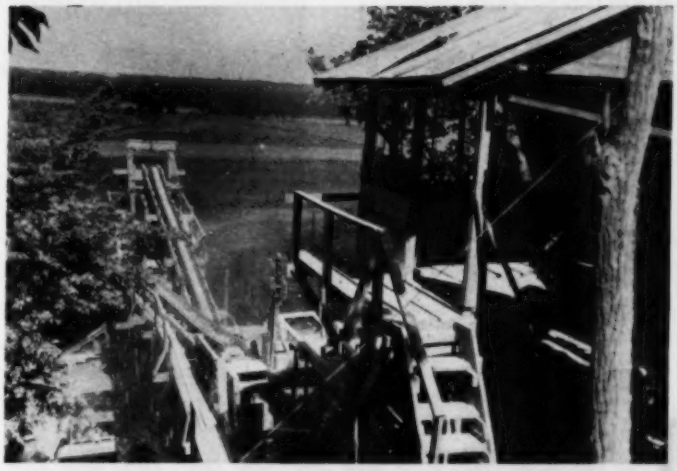
Smooth hydraulic lift, rapid raising of heavy loads, powerful electric drive, and easy maneuverability are additional features of the new model.

● New Truck Models

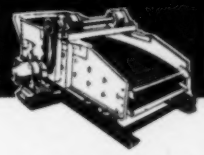
More strength, comfort, and power have been engineered into the 1951 model light line of trucks, according to spokesmen of the GMC Truck and Coach Division, General Motors Corporation.

Front and rear axles have been strengthened, the brake design has been changed for more powerful performance and longer wear, extra horsepower has been added to the engines, and improved cab ventilation and new seat cushions make for operator comfort.

The 1951 model also features new colors.



They do it with a
DEISTER...
for trouble free operation
the year around.



A 4' x 12' three-deck Deister Vibrating Screen used by Hayes Quarries, St. Joseph, Mo., handles an average of 90 to 100 tons of crushed rock an hour—grades and sizes 1½" and ¾" concrete rock, ½" asphalt rock and ¼" chips accurately and efficiently.

This quarry operates six days a week on a year-round basis, with the work-day for the Deister Screen ranging from eight to 10 hours. Quarry Manager F. J. Shields says: "I've had experience with all makes of vibrating screens, and the Deister is a good screen. We've had trouble-free operation from our Deister Screen."

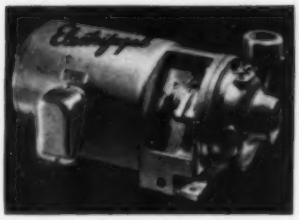
Performance and maintenance records established by Deister Vibrating Screens in all types of quarries and gravel plants are proof of their dependable versatility. They run longer with less trouble because of their rugged, all-welded construction . . . grade faster . . . size more accurately. There's a Deister Vibrating Screen for your job. Write for our engineering recommendations and complete information.

DEISTER
SCREENS
DEISTER MACHINE CO.
FORT WAYNE 4, INDIANA

● Centrifugal Pump

A redesigned close-coupled "Electrifugal" pump and motor with internal and external design changes to provide improved operating characteristics and greater ease in maintenance has been announced by Allis-Chalmers Manufacturing Co., S. 70th St., Milwaukee, Wis.

The company cites the following features: new sealed motor bearings; a unit-cast frame which provides perfect and permanent alignment; double seal on front motor bearing which keeps liquid out of the bearing under normal operating conditions; and a large opening in the frame between the pump and motor to make packing maintenance quick



and easy. Its all-cast-iron construction resists corrosive atmospheres.

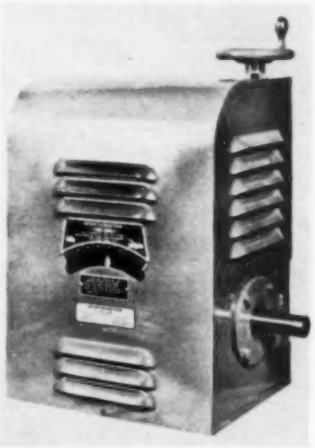
The pump is available with removable casing in some sizes and with removable cover plate in others. It can be had in ratings from 10 to 500 g.p.m. at heads to 220 ft.

The motor is designed and built especially for the Electrifugal pump. It has a double-dipped and double-baked stator, a rotor of pressure die-cast aluminum construction, and ventilating fans which move the air from the rear of the motor to the pump end. Motors range in size from ¾ to 10 hp. They are available in drip-proof, splash-proof, totally-enclosed, fan-cooled or explosion-proof types.

● Variable Transmission

A new variable speed transmission series, incorporating the Worthington tandem belt design, has been announced by Frank J. Whelan, vice-president of Worthington Pump and Machinery Corportation, Holyoke, Mass.

The new line, known as the Worthington "Allspeed" drive, will consist of six models, rated at 1, 3, 5, 7½, 10 and 15 hp. respectively and will offer variations of 16 to 1, 10 to 1, 9 to 1, 8 to 1, 6 to 1 and 6 to 1 respectively. At 1,725 r.p.m. input, the 1 hp. unit offers a range of 215 to 3,450 r.p.m., while the 15 hp. unit will vary from 370 to 2,220 r.p.m. with an input speed of 1,750 r.p.m.



Due to the tandem belt design, the Worthington Allspeed drive is particularly suited to applications where space limitations require extreme compactness. Each of the units can be furnished for vertical or horizontal operation, to run in either direction. Handwheel control will be normally furnished. Electrical remote controls are available where required.

● New Refractory

A new super refractory for lining high-temperature furnaces has been announced by The Babcock and Wilcox Company, 85 Liberty St., New York 6, N. Y.

The new material, known as "B&W Allmul", is produced from mullite, a super refractory material. Allmul does not melt until heated to more than 3,300 deg. F., one-third higher than the melt-

OSGOOD

Rock Shovels win nationwide recognition as most profitable units for the tough jobs

OSGOOD Model 720 Rock Shovels like this one owned by H & R Stone Company, Ridgeville, Indiana, are chosen by experienced rock excavators from coast to coast as the most profitable machines for the tough jobs.

Metered air control of all primary motions (swinging, traveling, hoisting, crowding, steering, etc.) greatly speeds production and lengthens life of both machine and operator. Shock-absorbing OSGOOD Air Cushion Clutches provide smoothest swing, travel and retract motions since steam and eliminate frequent time-consuming adjustments. Outside dipper sticks give greatest strength. Side frames are built deep to keep rocks and foreign matter out of tumblers and tread belts. Crawlers are 12' 9" long, 24" wide. Boom, 21'; handle, 16'; AMSCO Dipper, 1¼ cu. yd.; Cummins Diesel Engine, HBI-6. Write today for full details.

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Equipment designed with YOUR PROFIT in mind

The OSGOOD COMPANY

MARION, OHIO

AFFILIATED WITH THE GENERAL EXCAVATOR CO.

POWER SHOVELS, CRANES DRAGLINES, CLAMSHELLS PILE DRIVERS & BACK HOES CRAWLERS & MOBILCRANES DIESEL, GASOLINE OR ELECTRIC POWERED CAPACITIES ⅛ TO 2½ CU. YD.

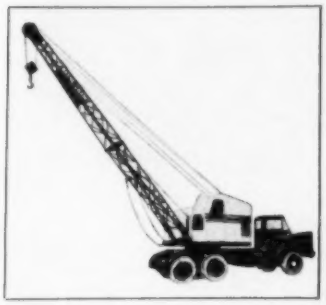
ing point of steel. Allmul firebricks will support 1,000 lbs. at 3,000 deg. F. without deforming, the company states. In tests, successive heating and spraying with cold water produced no cracking or chipping.

The new material will be manufactured principally in firebricks but grain and ramming mixes will be available.

● Truck-Mounted Crane

A 12½-ton truck-mounted crane is being built by the Wayne Crane Division of the American Steel Dredge Company, Fort Wayne, Ind.

This machine, "Model 40", can be converted easily to all crane and shovel



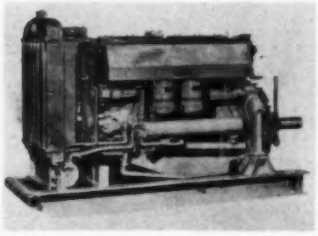
attachments. It travels at truck speeds on the highway and has ten forward and two reverse speeds. A locking third differential is used for heavy, off-the-road work. The model 40 lifts, booms, and swings simultaneously or independently.

Operating machinery is enclosed in a weatherproof cab and is powered by a 62-hp. six-cylinder gasoline engine. Assemblies are in units for easy replacement. Sixteen in. diameter drums and anti-friction bearings add to the life of the cable, according to the company.

● Heavy-Duty Diesel Engine

A new line of heavy-duty diesel engines has been announced by the Murphy Diesel Company, 5307 W. Burnham street, Milwaukee 14, Wis.

Six models from 145 to 220 hp. comprise the new line. They are designed



for continuous speeds up to 1,400 r.p.m. The higher operating speeds will make these units adaptable to torque converter power transmission and other uses. The design includes "true" diesel operation, unit fuel injection, four valves per cylinder, hydraulic servo-type governor, and other improvements.

TOPS IN QUALITY!

J-M INDUSTRIAL FRICTION MATERIALS more than meet the high-quality standards specified by the leading manufacturers of heavy-duty earth-moving equipment.

TOPS IN PERFORMANCE!

Operators who put their machines out on the job must rely on equipment that can take it—that's why they rely on J-M INDUSTRIAL FRICTION MATERIALS to keep equipment operating on the job.

Manufacturers . . . operators—if your business has to do with shovels, cranes, hoists, or similar industrial equipment, you owe it to yourself and your organization, to *know* all about J-M Friction Materials. Here are rugged clutch and brake materials that are designed to move and stop bigger loads at higher speeds . . . to give you more hours of higher performance at lower cost. Write today for your copy of "Johns-Manville Industrial Friction Materials," that will give you the details—Johns-Manville, Box 290, New York 16, N. Y.

JM

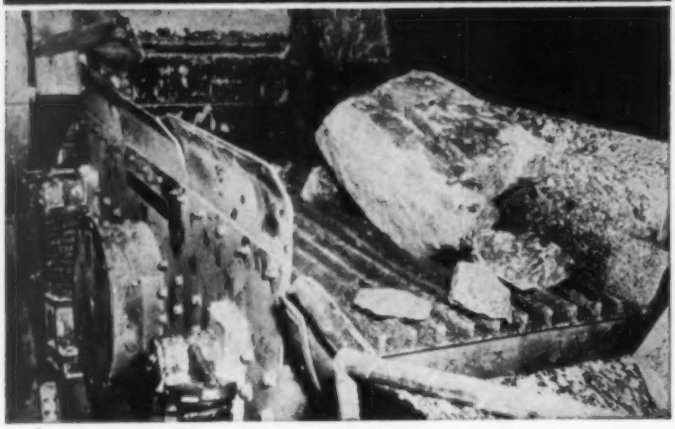
Johns-Manville

INDUSTRIAL FRICTION MATERIALS

No. 1 With Leading Manufacturers

INDISPENSABLE

FOR SCALPING—SIZING—CONVEYING



HEAVY DUTY SCALPER Talk about performance! This Hewitt-Robins Heavy Duty Scalper is handling 5 ft. cubes of 90 lb. material—11,250 lb. lumps—at the rate of 110 tons an hour—and doing it in continuous 16-18 hour operation!

Its 2-bearing vibrator is "full floating"—no load damage to bearings or shaft. And this Scalper won't shake the building because heavy-duty coil springs, which support the frame, absorb impact-vibration. A truly rugged machine for the toughest scalping jobs.

VIBREX STYLE M SCREEN For accurate, low-cost processing of the *sizes* you want, in the *capacity* you need, at the *speed* you must have. Vibrex® Screens use the "circle-throw" principle originated by Hewitt-Robins. Two positive strokes with every revolution of the counterweights. And the stroke is adjustable—at our factory or in your plant—as explained in Bulletin No. 122-B.

Made for overhead suspension or floor mounting—whichever best fits your needs.

SECTIONALIZED CONVEYORS Hewitt-Robins Sectionalized Belt Conveyors enable you to select a conveyor system *exactly suited to your needs* . . . in length, height, belt width and capacity. All components, including head and tail section, are Hewitt-Robins-engineered for top efficiency and low operating cost. Best of all, Hewitt-Robins makes both the conveyor machinery *and* the belt.

Remember—only Hewitt-Robins takes full responsibility for *all the elements* of a belt conveyor!

ROBINS CONVEYORS DIVISION

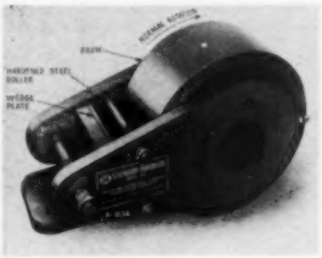
HEWITT-ROBINS INCORPORATED

270 PASSAIC AVE. · PASSAIC, N. J.

● Roller-Type Holdback

The "S-A" normal-duty roller-type holdback is designed to prevent reversal of inclined conveyors and bucket elevators when power is interrupted.

A hardened steel roller floats between a wedge plate and a drum keyed to the head shaft. When the direction of rotation of the head shaft starts to reverse, due to power failure, the hardened steel roller is immediately wedged between the drum and the plate, stopping motion gently and, without shock. When power is reapplied, the holdback releases immediately. There is little chance for dust, dirt, and corrosion to cause the roller-type holdback to fail, states the manufacturer, the Stephens-Adamson Mfg. Co., Aurora, Ill.



● Bin-Level Indicator

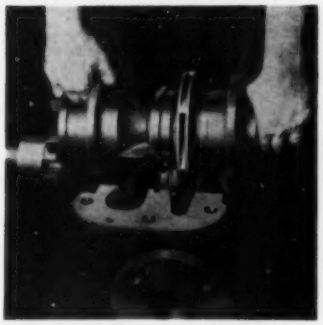
A new standard of complete reliability in performance is claimed for the Butler bin-level indicator by the manufacturer, Butler Bin Co., Waukesha, Wis. The body of the indicator is of extra heavy, malleable cast iron. This is faced with a long-wearing, pressure-sensitive metal diaphragm which actuates a micro-switch to turn on the signal. Furnished in sets of two, one unit is bolted to the wall at the top of the bin, the other is placed at the bottom. It fits every make and every type of bin and operates in virtually every material.

According to the Butler Bin Co., the bin-level indicator combines high sensitivity and accuracy with remarkable durability and long life.

● Replaceable Pump Unit

A new approach to pump problems is claimed by the DeLaval Steam Turbine Company, Trenton, 2, N. J.

The new method combines all working parts in a rotor assembly which can be easily removed and serviced without disconnecting the piping. The rotor as-



sembly consists of a stainless steel shaft, mechanical shaft seals, permanently lubricated ball bearings, and a cast bronze impeller. The case is cast iron, horizontally split for easy access without disturbing the piping. The rotor assembly can be exchanged or replaced on a service plan arrangement. Capacities of the new models range to 450 g.p.m. and heads to 230 ft.

● Gearing for Reduced Wear

New gearing designed to reduce wear and vibration has been announced by Allis-Chalmers Manufacturing Company, Milwaukee, Wis., as standard for its grinding mills, kilns, coolers and dryers.

The new gearing has a tooth profile generated as a true involute with a 20-degree pressure angle, a long addendum pinion and a short addendum spur gear. It replaces the 15-degree tooth form.

According to Allis-Chalmers engineers, the new design has 75 percent more tooth area in contact, and wear is distributed over a great space. Its use precludes interference between gear and pinion. Because the gear tooth profile is a true involute, the gear is revolved at a uniform velocity. With the new gearing, a high percentage of tooth contact is rolling rather than sliding action. Then, too, tooth contact pressures are reduced, permitting better lubrication. The long addendum pinion, in addition to giving more overlapping actin, also is said to eliminate undercutting of pinion teeth.

● New Line of V-Belts

The "HY-T" line of V-belts has been developed by the Goodyear Tire and Rubber Company, Akron, O.

The new belts make use of a chemically produced fiber that is noted for high-strength, low-stretch, mildew- and water-resistant, and shock-absorbing qualities, according to the company. The new fiber is also strongly resistant to shrinkage. HY-T belts are claimed to handle 40 percent more horsepower than standard multi-V-belts, without excessive stretch.

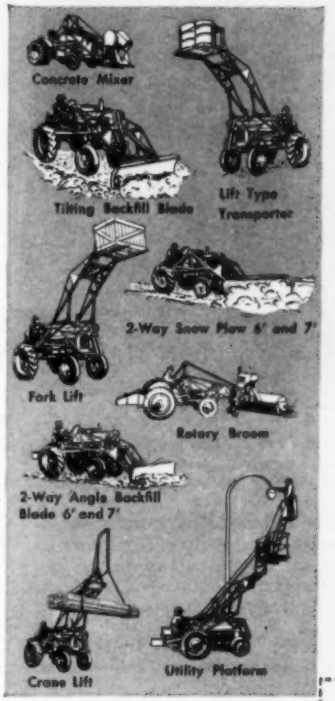
wagner
HYDRAULIC LOADERS

WM3 Hydraulic loader with material bucket Patents and Improvement Patents applied for.

unlimited time & effort savings

You save money when Wagner Loaders take over your material handling problems.

USES MULTIPLY with 15 interchangeable attachments



Coal Bucket — Snow Bucket
"V" Snow Plow — Concrete Bucket

AVAILABLE FOR:

Ford
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H&M
Farmall Cub
Case VA & VAI-VAC
John Deere "M" Series
Minneapolis-Moline RTI-RTU
Allis-Chalmers WD
LeRoi-Centaur & Tractair

AND MANY OTHERS

LOW INVESTMENT in a Wagner Loader is quickly written off as it pays for itself in more efficient material handling.

BUSY THE YEAR AROUND Wagner Loaders with 15 interchangeable attachments can be applied to over 50 different material handling problems.

EASY TO USE, the hydraulic double-acting controls put power at your finger-tips for fast precise operation of lifting and operating cylinders.

AND THEY STAY ON THE JOB Wagner loaders are built to withstand years of hard service. They have many outstanding extras in sturdiness that include: precision built gear type oil pump, heavy combination bumper and radiator grill guard, strong tubular structure.

DECIDE NOW to be one of the 35,000 users benefiting from unlimited time and effort savings with the Wagner Loader.

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TRACTOR LOADER

Please send complete information on loader for _____ tractor, model _____
I am interested as ☐ user; ☐ dealer.
Name _____
Address _____
City _____ State _____

MAIL TODAY Wagner Iron Works — Dept. 17-B 1905 S. 1st St., Milwaukee 1, Wis.

NAYLOR PIPE . . . Your "Ace in the Hole" for Mining Service

For hydraulic lines, for high and low pressure air lines, for de-watering and drainage, for push-pull ventilating, for water supply and sludge lines—you can always depend on Naylor pipe.

Its light weight makes it easier to handle and install, regardless of rough terrain. Its distinctive Lockseam Spiralweld structure gives it the strength and safety you require on the job. That's what makes Naylor different from ordinary light-weight pipe and why so many mining engineers regard it as their "ace in the hole" for piping jobs.

Sizes from 4" to 30" in diameter . . . Thickness from 14 to 7 gauge . . . all types of fittings, connections and fabrications. Write for new Bulletin No. 507.

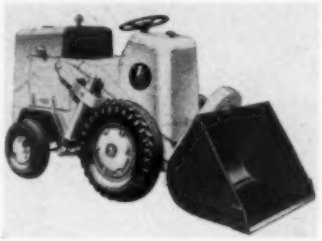
NAYLOR PIPE

Naylor Pipe Company, 1257 E. 92nd St., Chicago 19, Ill.
New York Office, 350 Madison Avenue, New York 17, N.Y.

● Improved Tractor-Shovel

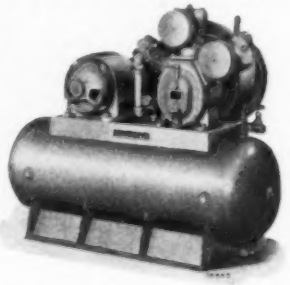
The Frank G. Hough Co., 750A Sunnyside Ave., Libertyville, Ill., announces production of a new, improved model HA "Payloader". This small, compact 12-cu. ft. tractor-shovel is used in plants where bulk materials must be unloaded from box cars and materials must be moved inside and outside of buildings.

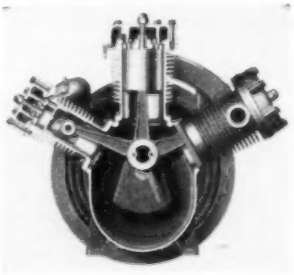
The improved Model HA is a faster, more rugged and more powerful machine. A higher compression engine gives more power and economy; the clutch is larger; operator's compartment is roomier and more comfortable; steering gear and linkage are more rugged; main frame is stronger; a constant mesh transmission insures faster, quieter, operation; maintenance operations are simplified by greater accessibility of engine and other parts.



● Air Compressor

Two lines of stationary air compressors, the "T" series, are announced by Ingersoll-Rand, 11 Broadway, New York 4, N. Y. One line is designed for 100- to 125-lb. normal industrial service and the other for 200-lb. continuous or 250-lb. intermittent service. Both lines are available as tank-mounted, baseplate-mounted, or bare units with electric motor or gasoline engine drive.



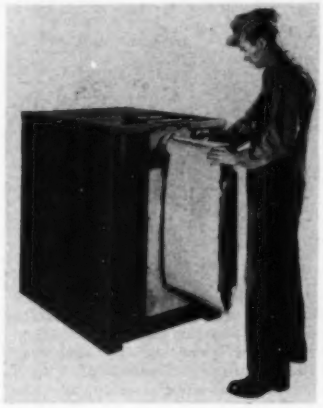


The units are air-cooled by flywheel fan blades. Standard equipment includes a centrifugal unloader and intake filter and muffler. Automatic start-and-stop controls are included on the mounted units. Several sizes are available in both lines.

● Valve Bag Packer

A pushbutton valve bag packer only 45 in. high is being made by the E. D. Coddington Manufacturing Company, 5074 N. 37 Street, Milwaukee 9, Wis.

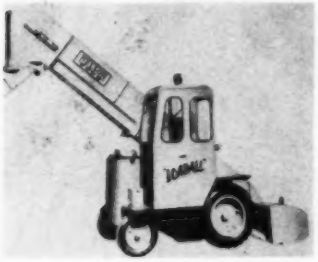
The "Auger-Matic" bag packer is a self contained unit that is placed under hoppers or chutes. It automatically fills the bag through a special spout, weighs the contents, and shuts off when the filling is completed. Bags from 25 to 100 lbs. capacity can be loaded. Pushbutton



controls operate the machine. The multiple auger that feeds the spout can be easily changed to accommodate various materials. Casters can be supplied for moving from location to location.

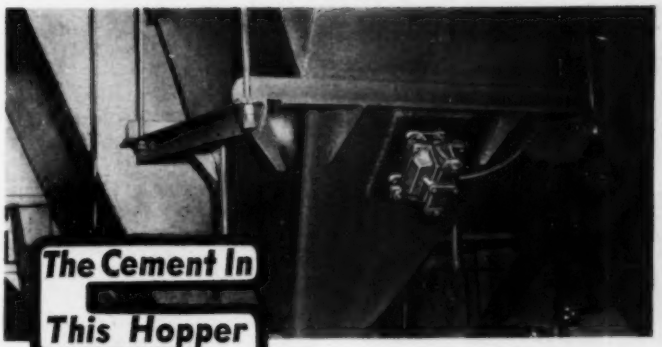
● Small Loader

An all-purpose loader, the "Loadall", has been introduced by the N. P. Nelson Iron Works, Inc., Clifton, N. J. It is claimed to be the only machine that will



handle sand, snow, gravel, coal, clinkers, cinders, humus, and many other products without change of belt or the use of special attachments.

The machine travels under its own power, supplied by a 4-cylinder, air-cooled engine. It is claimed that heavy materials can be loaded at the rate of 1¾ to 2¼ cu. yds. per minute.



The Cement In This Hopper Flows Freely

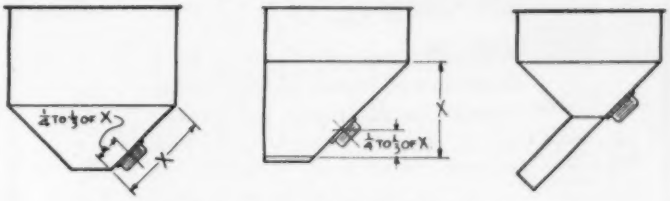
because its equipped with a

SYNTRON

"Pulsating Magnet"

ELECTRIC VIBRATOR

Simple, pulsating electromagnets that work right from your AC line — fasten to bins, hoppers and bunkers like these —



and keep the material—hot or cold—dry or damp—coarse or fine—free flowing.

They're available in a number of sizes for application to most anything from a 1 cu. ft. hopper up to big bunkers containing hundreds of tons.

They provide a safety factor, too—by eliminating the necessity for your men to climb ladders or framework and balance in precarious positions while spading, rodding or sledging clogged materials.

Syntron Engineers will be glad to recommend the proper Vibrator for your problem—send dimensional data, gauge of walls, type of material, etc.

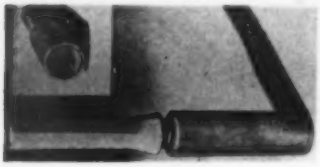
SYNTRON COMPANY

385 Carson Avenue Homer City, Penna.

● Hole-Saver Device

A "Hole-Saver" to reclaim lost bits and broken drill steels from the drill hole to avoid expensive redrilling is being made by the Rock Bit Sales and Service Company, 2514 E. Cumberland Street, Philadelphia 25, Pa.

The device is available to fit several sizes of drill steels. It is attached to a threaded steel and operated so that its peculiar, left-hand, tapered threads cut into the metal of the lost or broken piece and remove it quickly and easily, states the manufacturer.



● Portable Lighting System

A new low-voltage portable lighting system for mining and construction work, the "Joy-Lite," has recently been announced by the Joy Manufacturing Co., Pittsburgh 22, Pa. Driven by compressed air, the Joy-Lite will develop an output of 250 to 280 watts (power to operate four high-powered sealed-beam flood or spot lights) with air consumption not exceeding 25 c.f.m.

For protection from dirt and dripping water, the generator is mounted in a steel box equipped with a carrying handle for easy portability. Lamps have tripod swivel bases, which can be used as column clamps, and hooks which serve as hangers. The unit weighs 48 lbs.

● Jumbo Primary Feeder

The Pioneer Engineering Works, Minneapolis 13, Minn., has added a 72-in. primary feeder to its line of "Pioneer-Oro" heavy-duty feeders.

The "Jumbo" is 72 in. wide and is made in lengths up to 60 ft. Feeder pans and all other wearing parts are cast-manganese steel. The pans are interlocking and overlapping to reduce spillage. Drive links are cast integrally with the pans. Interlocking support points are cast on the pan proper.

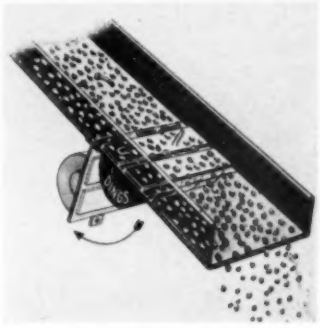
The pans and load are supported on three cast manganese steel rollers keyed

to heavy shafts turning in three special alloy bearings. The bearings are on transverse I-beams supported on deep longitudinal beams on which the head and tail shafts are mounted. Return idlers and a screw take-up are also provided.

● Magnetic Separator

Three-strength magnetic plate separators are now available from the Dings Magnetic Separator Company, 4740 W. Electric ave., Milwaukee, 46, Wis.

These "Perma-Plate" magnets may be mounted above belt conveyors, in wood



or metal chutes, spouts, troughs, and ducts; or above or below feed tables in hammermills and similar machinery. They are not affected by weather or temperature extremes, and will function with wet or dry materials. Self-cleaning automatic models are made, each in 19 sizes, from 4 in. through 72 in. wide and in 2-, 4-, 6-, and 8-pole systems.

COLPROVIA

COLPROVIA PRODUCTS

Paving Mixtures — For New Construction and Maintenance made by Cold and Heated Processes.

Topseal — Preserves all type surfaces: Masonry, Metal, Wood. Prevents gasoline and oil drip damage of asphalt pavements.

Groundseal — Insulates all type buildings from ground dampness. Conserves heat.

Flux and Powdered Asphalt — For Plant mix and Mixed-in-place construction.

Paint — For use on asphalt and masonry surfaces.

Cosponsors of Impact Mixing Process

Consult your local Licensee listed below.

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Arcole Midwest Corp.
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Asheville Paving Company Inc.
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Asheville, N. C.

Buffalo Crushed Stone Corp.
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Buffalo 3, N. Y.

Colprovia Asphalt Corp.
11 Ferry Street
Port Richmond
Staten Island, N. Y.

Colprovia Road Products Inc.
Box 5227, Columbia, S. C.

Crampton Brothers
220 East Shore Road
Great Neck, New York

Cranford Company
52 Ninth Street
Brooklyn, N. Y.

Duval Engineering & Contracting Co.
Box 1538, 2030 E. Adams Street
Jacksonville 1, Florida

Eastern Rock Products Inc.
404 Court Street
Utica 4, N. Y.

The General Crushed Stone Co.
Glen Mills, Pa.

Long Island Asphalt Company
Glenwood Landing
Glen Cove, Long Island, N. Y.

Jamestown Macadam Co. Inc.
Box 245, Jamestown, N. Y.

Kittanning Asphalt Products Co.
Box 591, Kittanning, Pa.

Lancaster Valite Company
Box 1326, Lancaster, Pa.

The Lane Construction Corp.
Westfield, Mass.

LeRoy Colprovia Pavements Inc.
183 East Main Street
Rochester 4, N. Y.

Michigan Colprovia Co.
2020 Chicago Drive
Grand Rapids, Mich.

New Enterprise Stone & Lime Co.
Roaring Spring, Pa.

The Old Colony Crushed Stone Co.
Vernon and Intervale Streets
Quincy 69, Mass.

Pavements, Inc.
311 Maple Avenue
North Haven, Conn.

Pittsburgh Asphalt Products Co.
51st St. and A.V.R.R.
Pittsburgh 1, Pa.

Westchester Colprovia Corp.
Bedford Hills, N. Y.

Windsor Service Inc.
2335 Kutztown Road
Reading, Pa.

Wyoming Sand & Stone Co.
634 Connell Building
Scranton, Pa.

York Bituminous Corp.
P.O. Box 705, York, Pa.

Some exclusive territory open

COLPROVIA ROADS, INC.

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183 East Main St.
Rochester 4, N. Y.

THE ABOVE PRODUCTS AND PROCESSES ARE COVERED BY SEPARATE PATENTS

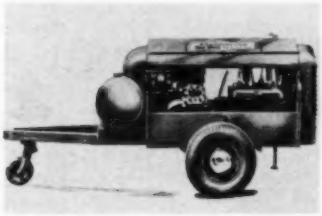
● Improved Magnetic Pulley

The Eriez Manufacturing Company, Erie, Pa., has redesigned its line of permanent magnetic pulleys, used for the elimination of tramp and other iron from nonmetallic minerals.

The new pulleys are available in sizes to carry 12-, 15-, 18-, 20-, 24-, and 30-in. belts of rubber, canvas, leather or other non-metallic material. The new pulleys are designed for reduced weight, increased pulling and holding power, and greater structural strength.

● Portable Air Compressor

An improved 105-cu. ft. portable air compressor has been announced by Worthington Pump and Machinery Corporation, Holyoke, Mass.



Lighter, lower, and more maneuverable, this compressor is powered by either diesel or gasoline engine.

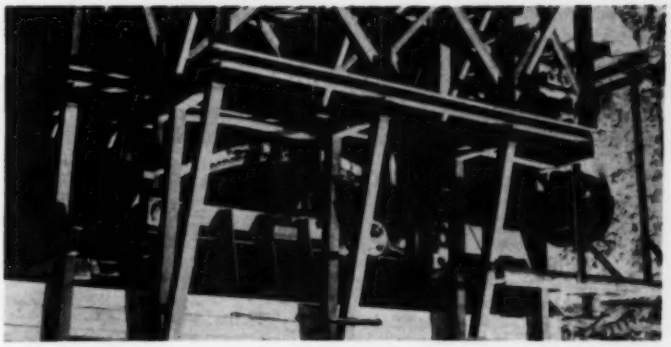
New features and advantages claimed by the manufacturer include the following: a zero pressure retractable third wheel; underslung spring-mounted undercarriage with heavy-duty commercial 15-in. trailer tires; a retractable support leg; a unit core radiator with pressure cap to prevent boiling and insure better engine operation at higher temperatures and altitudes; a carburetor with fixed jets for better economy; and relocation of the instrument panel and battery box.

● Dump Truck Self-Loader

Capable of being installed on most standard trucks, this dump truck self-loader is manufactured by the Ernest Holmes Co., W. 2505 E. 43rd St., Chattanooga, Tenn. Its installation converts a truck into an independent working unit and allows the driver to do light digging, grading, scooping up of materials, hauling and unloading. The shovel has a ½-cu. yd. capacity and a drop range of 8¼ in. below ground surface. It is operated by a balanced vane-type hydraulic pump.

● Manganese Apron Feeder

Lippmann Engineering Works of Milwaukee, Wis., has added a new manganese apron feeder to its current line of heavy- and super-duty apron feeders. Apron width is 4 ft., and it can be made in various lengths. The pans, rollers, sprockets and bushings are cast, austenitic manganese steel. The frame is heavy structural beam style, firmly welded and supported with cross structural members. All shafts turn on over-size anti-friction bearings, and the cast manganese pans hinge together in an endless apron. They are self-cleaning and firmly supported.



The feeder can be operated with either direct motor drive or from auxiliary equipment, with roller chain or belt. (See illustration above.)

In the month *Past Performance*
led users in 18 Different Industries*
to place orders for
SLY DUST FILTERS

One of five Sly Dust Filters in a large cement plant.

with a capacity to clean 72,000,000 cubic feet of dust-laden air every hour for many years to come.

In drawing their specifications, they used the services of

SLY Engineers who are resident in New York, Chicago, St. Louis, Philadelphia, Minneapolis, Birmingham, Cincinnati, Lansing, Los Angeles, Rochester, Toronto.

These qualified men are available to you without obligation.

* Cement, Chemicals, Gypsum, Diesel Engines, Flour Milling, Automotive, Wood Flour, Gold Mines, Steel Mills, Carbon, Roofing Slate, Granite Cutting, Soap, Paints, Lead Oxide, Plastics, Borax, Salt.

THE W. W. SLY MANUFACTURING CO.
4745 TRAIN AVENUE CLEVELAND 2, OHIO

personal mention

The following officers were recently elected by the directors of Superior Portland Cement, Inc., Seattle, Wash.: C. N. Reitze, president; N. H. Nelson, vice-president and general manager; J. H. McGoldrick, secretary; H. E. Thompson, treasurer and assistant secretary; P. R. Barrett, assistant secretary; and Fred Bailey, assistant treasurer.

Lawrence M. Arnold was elected to the board of directors

Charles H. Wicks has been named engineer and assistant to the president of the Chicago Gravel Company. Mr. Wicks will be largely responsible for activities at the Rockdale (Joliet) Ill., plant of the company.

The following officers have been elected by the board of the Panama Cement Company, of Panama City: Dr. Augusto S. Boyd, president; Luis Martinez, vice-president; Roberto Huertematte, treasurer; Inocencio Galindo V., secretary; and Eduardo Icaza A., Victor M. Tejeira, and Demetrio Rusodimos, directors.

Carlton J. Lewis, secretary and general manager of the Buffalo Gravel Corporation, Buffalo, N. Y., has been elected to the executive committee of the General Contracting Employers' Association of Buffalo.

R. Frank Atkinson has resigned as vice-president and general manager of the W. H. Loomis Talc Corporation, Gouverneur, N. Y., according to a recent announcement. F. A. McGonigle of Nickelplate, B. C., Canada, was appointed new general manager.

Mr. Atkinson, who was Loomis vice-president and general manager for the last three years, has been associated with the company for 25 years.

Two appointments were recently announced by officials of The Warner Company. Herbert J. Whitten, vice-president in charge of lime operations of the firm, was elected to the board of directors to succeed the late A. D. Warner Jr. Mr. Whitten spent many years in the company's sand and gravel division as maintenance manager and later as general superintendent of the Philadelphia yards. In 1946 he was transferred to the lime division and was elected vice-president in charge of the four Warner lime plants in Pennsylvania.

Carl R. Olson, vice-president of Kaiser Industries, Inc., has announced three appointments in the managements of several Kaiser companies.

W. A. Marsh

Wallace A. Marsh, former general manager of Permanente Cement Company, Glacier Sand and Gravel Company, and Permanente Steamship Corporation, has been appointed vice-president and general manager of these organizations. Mr. Marsh has been with various Kaiser companies since 1937. First a sand and gravel salesman for Henry J. Kaiser Company's Radum, Calif., plant, he subsequently served as manager of operations and sales for the firm.

Claude E. Harper, formerly general manager of Kaiser Gypsum, division of Kaiser Industries, Inc., has been appointed vice-president and general manager of that organization. Mr. Harper was a salesman of oil-well cements in 1941 when he joined the Kaiser organization, and later he became district manager of the Hawaiian division of Permanente Cement. Prior to his appointment as general manager, he served as assistant general manager of Standard Gypsum, now Kaiser Gypsum Company.

Robert S. Barneyback, formerly general manager of Henry J. Kaiser Company, Sand and Gravel Division, has been appointed vice-president and general manager of that company. Mr. Barneyback joined the Kaiser organization in 1933 during the construction of the San Francisco Bay Bridge approach. He served as assistant general manager of the Sand and Gravel Division until 1949, when he assumed the position of general manager.

C. E. Harper

R. S. Barneyback

Paul Bock has been appointed Eastern industrial lime sales representative, succeeding the late E. B. Emory. He will handle industrial lime and limestone sales for the Bellefonte and Cedar Hollow plants on the Eastern seaboard (east of Harrisburg and from northern New Jersey to Virginia). Mr. Bock joined the company in 1926 as a special representative for chemical lime sales, at Bellefonte; subsequently he worked out of the Pittsburgh, New York, and Philadelphia offices. He was closely associated with the development and introduction of Super-Limoid.

R. B. Fuller, manager of the Florida phosphate division of the International Minerals and Chemical Company, has been appointed to the board of directors of the Florida Power Corporation.

Washington News

(*From page* 82)

"The attempt, insofar as possible, to coordinate the timetable of military requirements with the schedule of NPA restriction orders.

"The immediate and active implementation by Army, Navy and Air Force procurement policy officials of an aggressive program of planned procurement designed to channel contracts to those industries or subgroups within industries which have been hardest hit by cutbacks.

"The splitting up of large procurement requirements into smaller units, so that a greater number of awards may be spread as widely as possible among small plants.

"The addition to the membership of all governmental industry advisory committees of small-business representatives."

Labor Developments

(*From page* 84)

ceed the average amount granted to employees doing similar work during the calendar year 1950. Where job classifications are grouped into labor grades or levels and wage or salary administration has been in terms of such grades or levels, the amount of increase shall not exceed the average increase granted to employees in the same labor grade or level in the calendar year 1950.

4. No employee shall be raised to a rate higher than the maximum rate of the job classification or, in the absence of a formal system of rate ranges, higher than the highest rate paid to any employee doing similar work on January 25, 1951.

trade notes

The Chicago Steel Foundry Company recently placed contracts worth approximately $150,000 for additional mechanization of their Chicago plant. Installation of the new equipment, which is to be completed in October, will include a larger capacity furnace and considerable conveying equipment.

The Chicago Steel Foundry Company was organized in Chicago in 1906, starting out in an old iron foundry with six crucible steel furnaces. After operating for five years, the company moved to its present location 8 miles from the Loop and constructed a larger plant with side blow converters. In 1920, electric furnaces were installed. For many years, the company has specialized in alloy steel castings, various grades of heat- and corrosion-resisting alloys marketed under the trade name "Pyrasteel," and the manufacture of portland cement.

J. P. O'Sullivan, president of The Hutchinson Foundry and Steel Company, Hutchinson, Kan., has announced a distributorship agreement to handle Worthington Pump and Machinery Corporation construction equipment, including mixers, placers, air tools, centrifugal pumps and suction discharge hoses.

The appointment of Southwest Machinery Company, Oklahoma City, Okla., as distributor for general-purpose excavators and Hydrocranes, is announced by Bucyrus-Erie Company, South Milwaukee, Wis. Southwest Machinery Company will handle sales and service of the Bucyrus-Erie line of ⅜- to 4-cu. yd. shovels, dragshovels, draglines and cranes —gasoline, diesel, or single-motor electric powered—as well as sales and service of the all-hydraulic 2-ton and 3-ton Hydrocranes, throughout the entire state of Oklahoma.

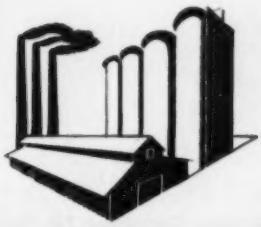
The second major expansion in the last few months is announced by Cummins Engine Company, Inc., of Columbus, Ind. The most recent plans outlined by R. E. Huthsteiner, executive vice-president, include an immediate extension on the 18 month old DD fuel pump building and new machinery for increasing the capacity for the new Cummins DD fuel pump and component parts. An expenditure of about $400,000 is involved.

Designed as a central storage for all materials and supplies, the large structure will make available 2.1 acres of land under one roof and add 92,000 sq. ft. of floor space to the factory facilities.

These new buildings and facilities, which are expected to be ready for use early in the second quarter, will increase the size of the plant more than 30 percent and boost to more than $6,000,000 the amount Cummins will have expended since the end of World War II for additional manufacturing facilities and for modernizing the Columbus plant.

W. A. Finn has been named general European manager of Worthington Pump and Machinery Corporation, Harrison, N. J., according to an announcement by S. R. Williams, vice-president in charge of foreign business. He replaces A. W. Fraser, who is assuming an executive sales position with Worthington and will make his headquarters in Chicago.

better masonry cement at lower cost with



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airalon is an air entraining agent and plasticizer formulated especially for masonry cement.

airalon comes ready to use. It contains, in one easy-to-handle compound, the saponified resin acids and fatty acids necessary to make a high quality masonry cement.

airalon is economical to use. It enables the cement maker to produce his present quality masonry cement at lower cost . . . or to produce a higher quality masonry cement at no increase in cost. Because **airalon** is added at the cement mill as received, in liquid form, it simplifies problems of inventory, handling, and storage. In addition, **airalon** is an excellent grinding aid.

airalon has been exhaustively tested in our own laboratories and in large commercial grinds . . . is accepted by ASTM under Cement Specification C 175-48T.

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SAUERMAN SCRAPER

Scraper Digs Deep Pit

Here is a Sauerman machine operating a 3 cu. yd. Crescent scraper on a 700-ft. haul in a deep gravel pit. It produces 80 tons an hour to keep a big plant humming.

Stockpiling Cement Clinker

Cement mill uses a simple setup of a small Sauerman Scraper to store hot clinker on ground facing grinding mill and to reclaim the cooled clinker. Scraper tail-block hooks into U-bolts anchored in building wall.

Dragline and Scraper

This picture shows how a Sauerman Crescent scraper attached to a trolley is rigged with a crawler dragline to move gravel from bed of river up onto bank.

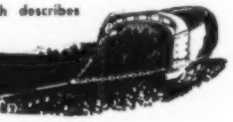
In a Sauerman Power Drag Scraper you find a profitable combination of digging power, haulage speed, long reach, simple operation and economical maintenance. It cuts costs to the bone on almost any job of digging and hauling earth or bulk materials distances from 100 ft. to 1,000 ft. or more.

A Sauerman machine gives good results on such diverse work as the excavation of hardpacked gravel, movement of sticky clay, handling of waste material, bulk material stockpiling, removal of sludge from settling ponds and so forth. In digging from a high hill it overcomes the hazards of caving walls.

An important exclusive feature of the Sauerman scraper machine is the Crescent bottomless scraper. Because of its streamline design, the "Crescent" requires less linepull than any other type of scraper, both in excavating and in conveying. It penetrates hard material with the ease of a plowshare, gathers a full load in a few seconds, then rides its load speedily to the dumping point where it makes an instantaneous, clean dump.

The operator of a Sauerman machine has easy control of the entire operation. Automatic shifting of the tail end of the machine is provided where desired. Any workman is readily trained as an operator. Power requirement is moderate. Installation and upkeep costs are surprisingly low. Made in a wide range of sizes covering the capacity needs of large and small plants.

Write today for free illustrated Scraper Catalog which describes many varied scraper applications.



SAUERMAN BROS., Inc.

534 S. CLINTON ST., CHICAGO 7, ILL.

Link-Belt Company announced that Charles W. Beauchamp, formerly assistant sales manager, Ewart plant, Indianapolis, silent chain drives, has been appointed assistant sales manager for both silent and roller chain; and that H. Merrill Bowman, formerly assistant sales manager at the company's Pershing Road plant, Chicago, has been appointed assistant sales manager at the Ewart plant for general products.

Andrew K. Kolar, district manager at Moline, Ill., has been appointed assistant sales manager for the Pershing Road plant. He will be succeeded at Moline by Stuart T. Penick, former district engineer at Dallas, Tex.

The Worthington Pump and Machinery Corporation announce the re-organization of the Construction Equipment Sales Divisions whereby the Holyoke, Mass., and Dunellen, N. J., divisions are grouped together with headquarters at Dunellen, N. J.

W. J. Fleming, formerly manager of the Holyoke Construction Equipment Sales Division, has been named works sales manager of the consolidated division, and J. S. Bachman has been named field sales manager.

R. R. Anderson

Worthington-Gamon Meter Company, Newark, N. J., formerly a subsidiary of Worthington Pump and Machinery Corporation, has been made a division of the corporation. The new division will continue the manufacture of liquid meters at the Newark plant, according to H. C. Ramsey, president of Worthington Pump and Machinery Corporation, Harrison, N. J.

Robert R. Anderson, formerly president, Worthington-Gamon Meter Company, has been elected vice-president of Worthington Pump and Machinery Corporation and will act as general manager of the new division. William C. Flanders, formerly vice-president of the meter company, has been appointed assistant general manager of the division, and Walter H. Zeis, formerly secretary and treasurer of the meter company, has been elected assistant secretary of the Worthington corporation.

R. A. Roosevelt, sales manager, Eriez Manufacturing Company, Erie, Pa., has announced the appointment of C. D. Sutton, Inc., as the Eriez representative in the Los Angeles area. Sutton will handle the complete Eriez line, which includes all permanent magnetic separation equipment of its own manufacture, Memco electro-magnetic separation equipment, and R.C.A. electronic metal detectors.

Ralph K. Gottshall, assistant general manager of the Explosives Department of the Atlas Powder Company, was appointed assistant to the president, Isaac Fogg.

Two appointments in the Industrial Products Sales division of The B. F. Goodrich Company have been announced: A. Clarke Mack Jr. has been named manager of flat belting, including conveyor, elevator, and transmission. He succeeds J. Robert Thompson, who has been appointed manager of the Atlanta district of the division.

H. N. How, president of Western Machinery Company, San Francisco, Calif., has accepted the invitation of Secretary of Interior Oscar Chapman to serve on the Advisory Committee on Mining Machinery in Washington, D. C. This group will assist the Defense Minerals Administration and the Defense Solid Fuels Administration with respect to mining machinery.

A. F. Davis, vice-president of The Lincoln Electric Company, Cleveland, O., was chosen "Man of the Year" by the magazine *Industrial Marketing*. Mr. Davis is in charge of advertising for Lincoln.

The Minnesota branch of The Euclid Road Machinery Company moved to a new building on Highway 169 West in Hibbing, Minn. Designed for the warehousing of parts and servicing of Euclid equipment, the building contains approximately 12,000 sq. ft. of floor space.

The Towmotor Corporation has announced the appointment of E. C. Iverson as chief engineer. Mr. Iverson has been associated with the J. D. Adams Mfg. Co. of Indianapolis in charge of product design and development.

Robert C. Ross has retired from active service with Joseph T. Ryerson & Son, Inc., Chicago, steel warehousing concern, after 47 years with the company.

He had been vice-president in charge of operations for many years. For the last two years he served in an advisory capacity.

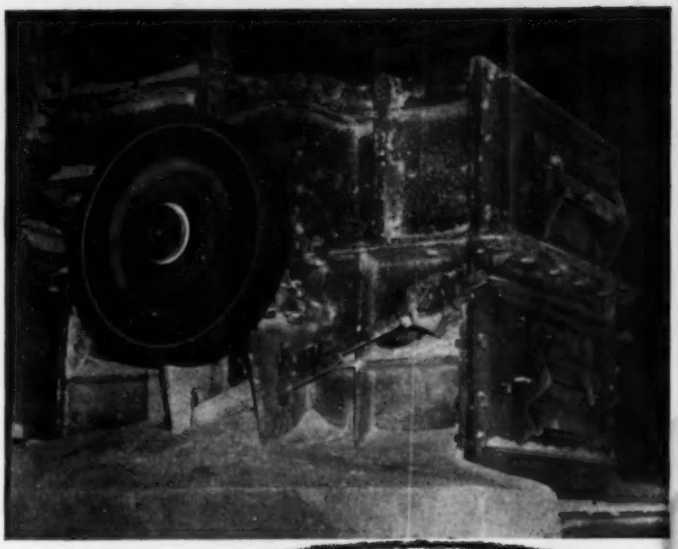
The appointment of Prime-Best Inc., 3820 West Villard Ave., Milwaukee, Wis., as distributor for Nordberg 4FS diesel engines has been announced by Nordberg Mfg. Co., Milwaukee 7, Wis.

Prime-Best Inc. will cover the southeastern territory of Wisconsin, including the counties of Green Lake, Walworth, Racine, Kenosha, Dane, Jefferson, Green, Waukesha, Milwaukee, Columbia, Dodge, Washington, Ozaukee, Marquette, Fond du Lac, Sheboygan, Winnebago and Calumet.

Three appointments were recently announced by Chase Bag Co. officials.

Harrison B. Rue, in charge of the Memphis sales office for the last four years, has been appointed sales manager of the Company's Buffalo, N. Y., branch. Mr. Rue's successor at the Memphis sales office will be H. J. Uldricks who was transferred from the Chase branch in Philadelphia.

R. J. Stevens was named a special representative of Chase Bag Company's Chicago general sales office.



1,150,000 TONS OF STONE CRUSHED WITH A PARTS-REPLACEMENT COST OF ONLY 1/3¢ PER TON

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From agstone to roadstone sizing, Americans offer the flexibility and consistent sizing control that make every reduction job more efficient as well as more profitable.

SEND for your copy of "BETTER STONE CRUSHING".

American PULVERIZER COMPANY
Originators and Manufacturers of Ring Crushers and Pulverizers
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Promotion of Clyde C. Williams to the post of general manager of the Marine and Industrial Engine Division of Chrysler Corporation was announced by R. T. Keller, president of the division. At the same time the appointment of E. E. Trittschuh as manager of the Marine Engine Division, the post left vacant by advancement of Mr. Williams.

The Gardner-Denver Company, Quincy, Ill., has announced the appointment of C. H. Rieman as manager of the company's mining division, succeeding the late A. W. Dale. Mr. Rieman, former district manager of the Duluth, Minn., branch, has been associated with the Gardner-Denver mining division for 14 years.

legal decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Recently several readers asked this important question: "Is a contractor liable for infringement of a patent when installing patented equipment sold by a company having no patent rights? What about patents covering the new type underground heat conduits? Are they valid?"

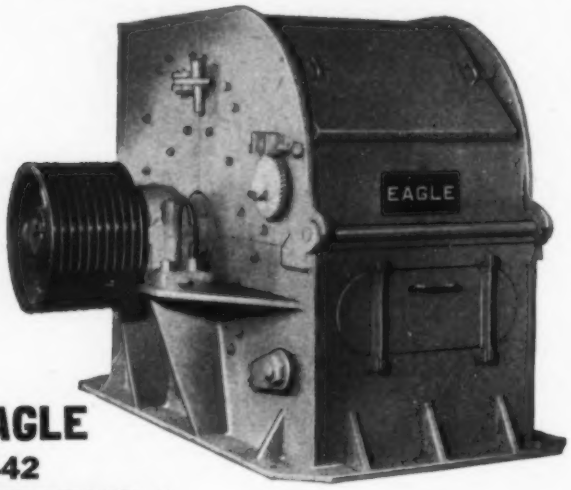
First, it is important to know that the higher courts hold that any person who either *makes, sells or uses* a patented article or device *without* consent of the owner of the patent *is liable* for infringement.

For the benefit of these readers the writer made special effort to locate and study the exact legal situation with respect to patents on nonmetallic heat-transmitting conduits and pipes.

The best installation for control heating systems that had been developed up to about 1930 was the ceramic "Tunnel-Type" system, in which the steam pipe was installed in a masonry tunnel lining structure in the bottom of a trench. The steam pipe then was buried by filling in the trench. The installation of this system was in many respects unsatisfactory because of the high installation expense due to the large amount of excavation required, expensive materials and the high cost of skilled labor, particularly in the masonry trades. Other disadvantages were the inconvenience to property owners adjacent to the installation, the disruption of traffic, and the likelihood of breakage of ceramic and similar materials which were difficult to repair and replace.

One Gottwald for a period of many years experimented to improve the "Tunnel-Type" system. He filed applications for several patents on the "Unit-Type" construction disclosed in his basic patent No. 1,991,455. This patent covered the construction and insulation of a steam-heating system capable of being assembled in a plant and transported to the job complete, and then lowered into a trench no larger than barely to receive it. Then the sections could be quickly and accurately tested and inspected immediately, and the trench could at once be filled. The depth of the trench for the patented system was decreased because of the metal covering which enabled the conduit to resist heavy loads and shock. Also, the new patented structure obviated the necessity of keeping the trench open several days while the lower half of the sheli was being laid until the concrete used in its construction had set, until the bottom portion of the shell and insulating material was applied, and then the upper half of the shell was completed and this concrete had set.

DOES DOUBLE DUTY



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CHECK AND MAIL THE CARD BELOW FOR ADDITIONAL INFORMATION ON NEW MACHINERY AND SUPPLIES

1. Protecting New and Old Metal Surfaces with "Longlife." A folder describing and illustrating the uses of Longlife coating for metal surfaces. A system of building up roofs with Longlife is illustrated. Many suggested uses are listed as well as practical ways of prolonging metal life by preventing corrosion, rust, and deterioration. Flexrock Company.

2. Mobil-Air 600 Gyro Flow Air Compressor. (Form 2310) A large single-page flyer that illustrates and lists features of a new 600-cu. ft. air compressor having no valves, pistons, rod bearings or clutch. Ingersoll-Rand.

3. Wagner Tractor Loaders and Attachments. Seven folders that show the application of Wagner hydraulic tractor loading shovels and other attachments such as fork lifts, backfill blades, crane lifts, and utility platforms to industrial use and other items for agricultural application. A separate folder is designed to show application to each make of tractor. Case "VA" and "VAI", John Deere "M", "MI", "MC", "MT", Ford, and Ferguson tractors are included. Specifications are given for the loader as well as each attachment. Wagner Iron Works.

4. Sound Powered. (Catalog 400 A.) A booklet that covers a line of sound-powered telephones utilizing the vibrations of the voice to create the current which activates the system. United States Instrument Corp.

5. The Miller Tilt Top. Trailers with tilting tops for hauling compressors, tractors, portable power plants, and other movable equipment are covered in this bulletin. Models with capacities from 2 to 10 tons and attachments are pictured and described. Many uses are suggested for saving time and labor in moving bulky machines and equipment. Ray Miller Research Engineers.

6. A Modern Central Mix Plant. (Bulletin No. SP-8-'50.) Illustrations and descriptions of a central mixing plant for premixing or dry batching of concrete take up both sides of this flyer. A close-up shows the simplified control system, scales, operator's position, and mixer mouth for visual inspection of the batch. The special tilting mixer is thoroughly described. Supremix, Inc.

7. Transo Truck Mixer Drive and Transmissions. Four pages of pictures and general descriptions of truck mixer drives and six transmissions. Keyed illustration locates most important parts. Specifications and descriptions of other Transo products are included. The Transmissive and Gear Company.

8. Some Quick Facts About 6-Wheelers. Tandem drive units are clearly portrayed, and diagrams show reaction of parts under various driving conditions. Methods of power applications are shown and described. Information given is especially designed for truck users, but is useful to any operator of tandem drive equipment. The Timken-Detroit Axle Company.

9. Wal-Lok. Leaflet describing the Wal-Lok System of reinforcing concrete block masonry. Sizes, uses, advantages, and application are covered in an informative manner. Adrian Pearless, Inc.

10. Are You Meeting Modern Streamlined Competition With Horse and Buggy Days Equipment? Illustrations and descriptions in this folder feature advantages of Miuco mixer, skip hoist, block machine, and complete block plant. Also describes a concrete brick attachment. Miuco Corporation.

11. E-M Synchronizer, Air Compressor Number. (No. 200-syn-52) A house organ that covers the field of large stationary air compressors with text, photos and diagrams in an interesting and informative manner. Articles by division managers of the company give authentic technical information in simple language. The publication also contains information on electric motors and controls. Electric Machinery Manufacturing Company.

12. Ornamental Products. A 16-page catalog illustrating many molds available for casting concrete articles. Prices are included. Concrete Machinery Company.

13. Flexicore Facts. (No. 22) This leaflet describes the use of Flexicore precast concrete slabs in housing projects. Illustrations and text show the installation and cite the advantages of this type of construction. The Flexicore Company.

14. Hydrocrane. (Bulletin H-8-1A) Illustrations, text, and drawings present essential features of a completely hydraulic crane. Diagrams show method of operation for each type of attachment. Closeup view illustrates how telescopic boom is extended. Separate folder contains many on-the-job pictures. Bucyrus-Erie Co., Hydrocrane Division.

15. General Motors Diesel Series 71 Engines. A new catalog describing the Detroit Diesel Engine Division's complete line of 2-cycle diesel engines. Covers single and multiple engine units from 2 to 24 cylinders and contains data on design and interchangeability of parts, as well as a power chart and engine illustrations. Detroit Diesel Engine Division, General Motors Corp.

16. Eimco Rocker Shovel 102. (Bulletin L1023) Action pictures show uses for which this piece of equipment is suitable. Design and construction features and special advantages are listed, and specifications are given. The Eimco Corp.

17. Rotary Air-Blast Drilling with the Joy Champion Blast Hole Drill. A 12-page bulletin describing the work that can be done with the Champion. Construction features, typical applications, and examples of footage and bit life in those applications are included. There are brief descriptions of other Joy excavation equipment, and a table of specifications is given. Joy Mfg. Co.

18. Cottrell Electrical Precipitators and The Multiclone Mechanical Dust Collector. The first booklet answers the questions of design engineers, plant engineers

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March, 1951

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and others interested in the collection of industrial dusts and mists by electrical precipitators. Contains 38 pages of useful information, fully illustrated. The second performs the same service for mechanical dust collectors. The Western Precipitation Corp.

19. **The Effects of Calcium Chloride on Portland Cement.** A 37-page booklet covering the following topics: effects of calcium chloride on standard portland cement mixes at 70 deg. F., cold weather concreting, special cements (air-entraining, high-early-strength, etc.), general data on dry mixes, reinforcing steel, resistance to alkali waters, colored concrete, calcium chloride in mortars and stucco. There is also a section containing answers to questions most commonly asked regarding the integral use of calcium chloride with portland cement. Solvay Sales Division, Allied Chemical & Dye Corp.

20. **General No-Pallet Block Machine.** Flier presenting the main features of design, construction, and performance of a palletless block machine. Prices are included, as well as a chatty account of the history of the device. General Engines Co., Inc.

21. **Clyde Frame-5 Hoists.** This bulletin describes in detail a hoist available with gasoline, diesel, or electric power. Special features are outlined, and closeup views show these clearly. Specifications and a table of typical capacities are included. Clyde Iron Works, Inc.

22. **Two catalogs.** Sixteen-page catalog on the Hystaway contains operational photographs of the "3-in-one" machine for mounting on "Caterpillar" track-type tractors. Gives mounting procedure, complete specifications, and dimensional data and lists optional equipment and attachments. Six-page booklet on the Grid Roller shows practical applications on actual jobs. Operation is described in a step-by-step sequence. Details of the drums, grids, and weight factors are fully interpreted. Hyster Company.

23. **Bellows Electroaire Valve.** (Bulletin AV-200) Six-page folder illustrating and describing the Bellows Electroaire Valve. Detailed technical data and wiring diagrams are shown. Keyed sketches show important parts. The Bellows Company.

24. **Dimensional Data Card.** (8½ by 11 in.) One side covers the WeldELL line of Taylor Forge welding fittings, showing wall thickness and essential dimensions for all types of fittings for every nominal pipe size from ½ in. through 30 in. Other side covers complete line of forged steel flanges. Gives dimensions and bolting data for all types of flanges in all weights for pipe sizes from ½ in. through 24 in. Taylor Forge & Pipe Works.

25. **Standard Specifications—Towmotor Fork Lift Trucks, Tractors and Electric Pallet Truck.** Contains complete data on these pieces of equipment—capacities, load centers, lift heights, weights, dimensions, turning radii, speeds of travel, etc. Towmotor Corp.

26. **Kalamazoo Speed Trucks—Model 2500.** A presentation of a truck designed for rapid materials handling in narrow areas. Unusual photographs show special design features. Specifications are included. Kalamazoo Mfg. Co.

27. **Hardinge Lime Hydrators.** (Bulletin No. 40) Describes a line of hydrators which combine "most desirable features of the Schulthess, McGann, and Kuntz hydrators", manufacturing rights for which have recently been acquired by Hardinge. Subjects included are the theory of lime hydration, construction details, dimensions, and capacities, etc. Other Hardinge equipment for the lime industry is also discussed. Hardinge Co., Inc.

28. **Operator's Handbook.** A 32-page four-color handbook printed in comic book style, containing information on the operation of "Caterpillar" equipment operators. Techniques are simplified through the use of cartoon illustrations. Caterpillar Tractor Co.

29. **Bin Stock Lately?** A four-page bulletin (with layout data sheet inserted) picturing and describing Type F vibrators for hoppers, bins, chutes, batch mixers, mixed concrete, cement, sand and gravel. Also includes similar data on Type UH vibrators (for precast steps, burial vaults, and large pipe forms), Type VG (for culverts, large precast slabs, etc.), Type LSRR (for unloading bulk cement shipments), and Type SA (for lintel production, steps, vaults, and concrete block). All types are illustrated. Cleveland Vibrator Co.

30. **Apparatus Bushing Standardization.** (Bulletin GEC-715) Notebook-type booklet explaining the new General Electric standardization program which replaces more than 1000 different types of transformer and circuit breaker bushings with only 38 standard bushings. Explains such advantages of standardization as lower price, faster delivery, and reduced inventories. General Electric.

31. **Miniature Bulletin of Sturtevant Products.** A 68-page booklet containing reproductions of standard size bulletins for Sturtevant crushing, grinding, separating, elevating, conveying, and mixing machines. A wealth of design and specification data about many quarry machines assembled together. Sturtevant Mill Company.

32. **"Twistlie" Double-Closure Bin Valves.** Tear sheet describing the dust-tight, dribble-proof, lump-or-fine-material handling valves that close by cable pull to center of rubber sleeve which twist to shut off flow of materials. Valve is self-opening. Stephens-Adamson Mfg. Co.

33. **Gear Data on the "Tool Steel" Process.** A well-written and profusely illustrated 64-page booklet describing Tool Steel gears from definition through application and guarantee to representatives. Describes the patented Randupson process of casting bevel gears and pinions via an aluminum pattern and cement mold. Contains a picture story of tool steel facilities, a chart showing actual size pitches from 1 to 48 D.P., and abundant data concerning gear tooth terms, measurements required, rules and formulas, and other tool steel products. The Tool Steel Gear and Pinion Company.

34. **The Forney Compression Tester.** (Bulletin 102) Folder explaining Forney's compression tester with direct-reading guage that eliminates computation in testing cement content, mixing, segregation, molding, water content, curing, aggregate, and grading. Forney's Inc.

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"KEEPS PROMISES"

The new patented invention makes it possible not only to dig a smaller trench, but units can be installed as fast as space be filled as soon as the connections are made.

It is important to know that in *Ric-Wil Company v. E. B. Kaiser Company*, 179 Fed. (2d) 401, the higher court upheld the validity of Gottwald's patents Nos. 1,991,455; 2,050,968; reissue patent No. 22,988; and 2,378,214.

This court clearly held that a contractor is fully liable for patent infringement if he purchases any or all parts of a patented invention from one who has no authority or license from the owner of the patent. Also, a contractor is liable for infringement who installs patented conduits, or other patented products, without consent of the owner of the patent. And the user of the conduits would be liable also for infringement of the patents.

Readers interested in reading the above patents may obtain copies by addressing: Hon. Commissioner of Patents, Washington, D. C., and enclosing 25 cents for each patent copy desired.

Lien Held Valid

Considerable discussion has arisen from time to time over the legal question: "How specific must a sub-contractor's mechanic's lien notice be to enable him to file a valid mechanic's lien on real property on which he performed work?"

According to a recent higher court the answer is: The lien is valid if the sub-contractor includes in his mechanic's lien notice to the property owner sufficient data to enable the property owner to determine how much money he must withhold from the general contractor.

For example, in *Mullool Company v. Short*, 74 Atl. (2d) 136, it was shown that a property owner named Short made a contract with a general contractor to erect a building on land which Short owned. The general contractor in turn entered into a contract with a sub-contractor to install materials in the building. Later Short defaulted in payments and the sub-contractor served notice that he would file a claim for a mechanic's lien. This notice was not very specific but informed Short that the sub-contractor was filing a claim for a specific sum of money due to labor and materials used in the installation of materials and equipment in the building.

In subsequent litigation Short argued that the mechanic's lien was void because the sub-contractor had not included *all* details in the notice. It is interesting to observe that the higher court held the mechanic's lien valid, saying:

"The purpose of the required notice is to inform the owner of the demand and the nature thereof in order that he may protect himself. . . . Defendant Short was notified of the cost of the materials and labor for which payment had not been made and was told summarily what comprised these costs. This was sufficient to enable him to determine how much he should withhold from the

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general contractor Le-Donne in order to avoid double payments."

Independent Contractors

It is well established law that employers need not pay unemployment compensation, social security, workmen's compensation and like taxes on independent contractors. Moreover, an employer is not ordinarily liable in damages for injuries caused persons or property by negligence of an independent contractor. Neither may an independent contractor recover compensation under the State Workmen's Compensation Act for injuries sustained during working hours.

For example, in *Peterson v. Highland Corporation*, 23 So. (2d) 716, it was shown that one Peterson was paid by the Highland Corporation a flat rate or contract price for performing jobs. Peterson furnished his own tools and employed and paid his help. He had the sole right to hire and fire any and all of his helpers.

Peterson was killed while engaged in performing this work. His widow filed a claim for compensation under the State Workmen's Compensation Act. The higher court held that Peterson *was an independent contractor* and therefore his widow was *not* entitled to compensation.

For comparison, see *Magarian v. Southern Distributors*, 1 So. (2d) 861. This court held:

"Commonly recognized tests of the independent contractor relationship are the existence of a contract for the performance by a person of a certain piece or kind of work at a fixed price, the independent nature of his business or his distinct calling, his employment of assistants with the right to supervise their activities, his obligation to furnish necessary tools, supplies and materials, his right to control the progress of the work except as to final results, the time for which the workman is employed, the method of payment, whether by time or by job, and whether the work is part of the regular business of the employer."

Anti-Monopoly Law

Considerable discussion has arisen from time to time over the legal question: Does an anti-monopoly law of a state prohibit a union from refusing to supply labor to contractors who require and need such labor to carry on his business? A recent higher court said: "No."

For example, in *Rochette & Parzini Corporation v. Campo*, 93 N. E. (2d) 652, the testimony showed facts, as follows: The Architectural Sculptors' and Carvers' Association controls within the metropolitan area of greater New York the supply of union labor that performs exterior work on all types of stone except granite. There was a time when the union accorded collective bargaining rights to the Rochette and Parzini Corporation, a contractor engaged in the sculpture of stone. But since 1946 all attempts of the contractor to enter into a collective bargaining agreement with the union have been rebuffed.

The evidence shows that the union is comprised of approximately 30 to 35 members, which constitute all of the available manpower in the entire indus-

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try, and enjoys a monopoly in the supply of labor in the metropolitan area. The union refused to furnish labor or manpower to the contractor on the contention that the prices were getting "too cheap" in the industry and that the union would not furnish labor to subcontractors.

Rochette and Parzini Corporation filed suit on the ground that refusal of the union to furnish it labor violates the state law which declares contracts or agreements for monopoly or in restraint of trade to be void.

The higher court refused to hold in favor of Rochette and Parzini Corporation and said:

"The right of the plaintiff (Rochette and Parzini Corporation) to carry on that business was a thing of value. If the defendant union interfered with that right without just cause its action was unlawful."

Courts Disagree

Considerable discussion has arisen from time to time over the legal question: What is proper damage allowance for death of a person? It is important to know that the higher courts disagree as to a proper damage award.

According to a recent higher court, $3,780 damages is proper allowance for death of a 3½-year-old child killed as a result of a company's negligence.

See *Laferriere v. Augusta Company*, 60 Atl. (2d) 517. In this case the testimony showed that a child was killed by negligence of a company's motor truck driver. The jury awarded only $3,780 damages. The higher court approved the verdict.

Also, see *Lewiston v. Augusta*, 112 Me. 96. Here a jury awarded $1,811 for the death of an 8-year-old child. The higher court reduced the damage award to $500. And in *Blanchette v. Miles*, 27 A. (2d) 396, an award by referees of $1,000 for the death of a 12-year-old child was upheld by the higher court, as reasonably adequate.

For comparison, see *Green*, 48 Atl. (2) 390. This court awarded a husband and wife $85,000 for injuries caused by a negligent driver. Quite a variation!

Breach of Contract

Considerable discussion has arisen from time to time over the legal question: If a sub-contractor breaches his contract with a general contractor, can the sub-contractor recover any payment for work and materials furnished up to the date he breached the contract?

According to a recent higher court, the sub-contractor may receive payment for the actual value of labor, plus materials which he furnished before he breached the contract.

For example, in *Nickel v. Pollia*, 179 Fed. (2d) 160, it was shown that a sub-contractor entered into a sub-contract with a general contractor to furnish labor and materials on a project for a total payment of $89,244.

The sub-contract was terminated by the general contractor because the sub-contractor breached the contract.

In subsequent litigation the higher court held that the sub-contractor was entitled to recover the "reasonable value" of the services rendered and material furnished up to the date of the breach. The court said:

"Having breached his contract, Pollia (sub-contractor) could recover only the reasonable value of the services rendered and of the material furnished."

What Is Mining?

Recently a reader asked: Is quarrying stone considered a "mining" operation?

The answer is: The term "mining" originally conveyed the idea of extracting minerals from the earth by means of tunneling and shafting, but in modern times it has assumed a broader signification, and is *not now limited* to the method of excavation, and includes open workings or quarries. Hence the word "mining" includes all substances which are classified geologically as minerals, and ordinarily includes placer mining.

See *Burdick v. Dillon*, 144 F. 737,741. This higher court held that the word "mining" includes quarrying.

Also, see *Union Drainage Dist. No. 6 of Towns of Bourbonnais and Manteno v. Manteno Limestone Company*, 93 N. E. (2d) 500. This late court held that the term "mining" includes the quarrying of limestone.

Total Disability

Recently a higher court laid down new law to the effect that under the State Workmen's Compensation Act if an injured employee cannot perform his regular duties he is *totally* disabled.

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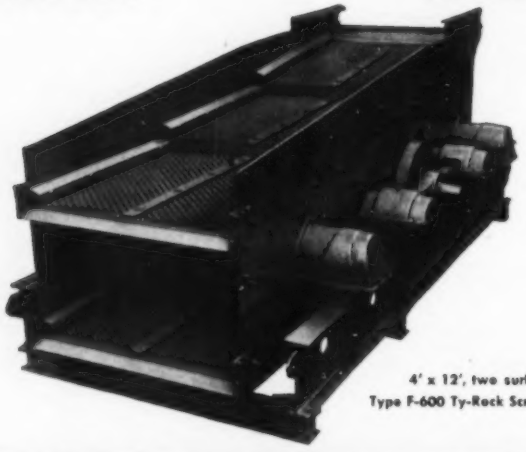

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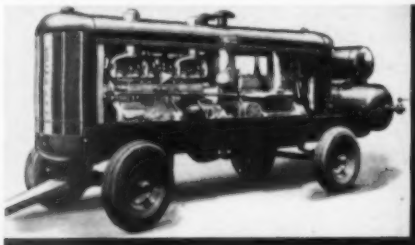

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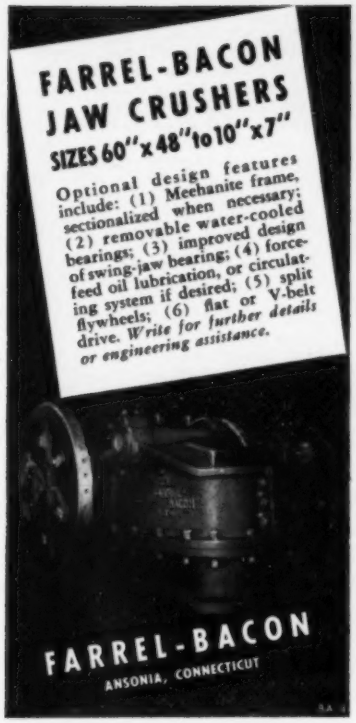
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For example, in *Finch v. Ford*, 32 N. W. (2d) 712, it was disclosed that for four years an employee was subjected to smoke, fumes, and dust. At times the employee became sick and found it difficult to continue his work.

The Industrial Commission awarded the employee compensation based on total disability although he was only partially disabled from a dust disease. The employer contested the award contending that the employee is not suffering a compensable total disability, but is, at most, only partially disabled.

Nevertheless the higher court approved the commission's award, saying: "We believe that the commission was correct in holding that plaintiff (employee) was totally disabled. The test is whether he was able to earn full wages at the work at which he was employed when last subjected to the conditions resulting in disability."

For further comparison see *Ellis v. Georgia Marble Company*, 232 S. W. (2d) 45. Here an employee named Ellis brought suit against the Georgia Marble Company to recover for injuries sustained while unloading marble. Ellis contended that the company was liable in damages because the marble had been negligently loaded. But Ellis failed to prove his allegations. The higher court held in favor of the marble company and refused to award compensation to the employee.

Liability for Errors

Recently a reader asked: Is a salesman or employee liable for money lost by his employer due to the former's errors in figuring installation contracts, and performing the work at a loss? According to a recent higher court, the answer is no.

For example, in *McKinley v. Perma Stone. Company*, 231 S. W. (2d) 286, the testimony showed facts, as follows: The Perma Stone Company is in the business of applying to the exterior of buildings a concrete mixture molded in the shape of stones. The product is known as Perma Stone and is intended to give the building upon which it was used the appearance of a stone structure. The company hired one McKinley as sales manager, and up to that time the company had done very little work with Perma Stone. It was agreed in writing that McKinley should be paid 15 percent commission on all sales made by him, and 5 percent commission on all sales made by other salesmen. McKinley worked for the company for one year, at which time a dispute arose and McKinley quit the employment. During the whole period of McKinley's employment there were 45 contracts closed. They totaled in gross $274,676.30, and McKinley claimed that there was still due him $3,901.76 in earned commissions. McKinley sued the company for this amount.

The counsel for the company did not deny that these commissions had not been paid to McKinley, but argued that the company had lost $3,686.75 on certain contracts that McKinley had figured too low. It was contended that McKinley was liable to the company for this loss.

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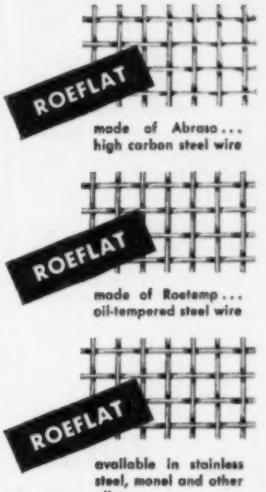
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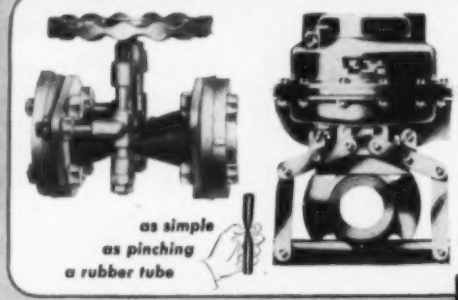

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The higher court held that McKinley was *not* liable for money lost by the company on his errors in figuring contracts and doing jobs at a loss. The court said:

"The evidence did not authorize judgment for defendant (Perma Stone Company) on counterclaim predicated on theory that plaintiff as an agent of the defendants was chargeable with losses due to his negligence or because of wrongful acts or disloyalty."

Labor Trouble

Considerable discussion has arisen from time to time over the legal question: Is a contractor liable for breaching a contract due to labor trouble? The answer is no, if his contract contains a clause limiting his liability in this respect.

For example, in *Klein v. Moore*, 210 Pac. (2d) 363, the testimony showed facts, as follows: A contractor signed a written contract which contained this clause: "Work will be executed as promptly as possible, subject to delays occasioned by strikes, lockouts, fires, carriers and other causes beyond our control."

Due to circumstances over which the contractor had no control, he could not obtain materials needed to fulfill the contract. The property owner sued the contractor for heavy damages, alleging breach of the contract.

The higher court held the contractor not liable and explained that the abovementioned clause protected the contractor from liabilty for a breach of the contract caused by his failure to obtain needed materials.

This court also explained that either a contractor or a property owner may by contract obligate the other to all lawful obligations. Hence, the fact that a contract contains a clause intended to relieve the contractor from liability for a breach is good evidence which will assist the contractor to win a subsequent suit. Hence, contractors who desire to avoid law suits should include in their contracts such clauses as may relieve them from reasons of an anticipated breach. Failure of the contractor to include in his contract a clause of this nature will result in his liability for a breach, irrespective of the cause. Such ordinary excuses will not relieve a contractor for damages as these: he could not obtain materials to fulfill the terms of the contract, or the weather was unusual and retarded operations, or he could not obtain needed help, or a strike prevented him from completing the job, or government restrictions prevented from obtaining materials, labor or supplies needed to comply with the terms of the contract. In other words, the courts very consistently and invariably hold that *no* ordinary excuse will enable a contractor to avoid responsibilities for breaching a contract, unless a clause is inserted in the contract which specifically relieves the contractor.

On the other hand, and to equal advantage and benefit of contractors, the courts will not allow a property owner in any manner to breach his obligations, nor by mere forgetfulness penalize a contractor. See the case of *Miller*, 47 So. (2d)

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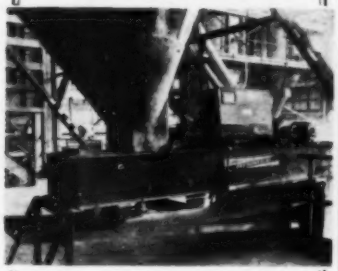

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721. In this case a property owner forgot to include in the contract that he would require the contractor to furnish a bond. After the contract was signed the owner informed the contractor that it was regular practice to include in similar contracts a clause that the contractor would furnish bond to guarantee performance of the contract, but that he, the property owner, had by error failed to include this clause in the contract. The property owner refused to complete his obligations when the contractor refused to furnish a bond. The higher court promptly held the property owner liable in damages to the contractor.

traffic news

GENERAL FREIGHT TRAFFIC COMMITTEE
Eastern-Railroads

Bulletin G-3339 (Shipper)—Proposed to establish on sand (except sand, molding, bonded, naturally or otherwise, and except ground or pulverized sand) and/or gravel, in open-top cars, without tarpaulin or other protective covering, carload minimum weight 90 percent of marked capacity of car, from Coshocton, O., to Rook, Pa., $2.07 per net ton, including all increases.

CENTRAL TERRITORY RAILROADS FREIGHT TRAFFIC COMMITTEE

Docket 88115 (I)—Proposed to establish on sand (except blast, core, engine, filter, fire or furnace, foundry, blast, grinding, ground, loam, moulding, moulding naturally-bonded, polishing, pulverized or silica) or gravel, carlots, in open-top cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible or cubical capacity, actual weight will apply from Cleves, O., to Batesville, Ind., 105 cents per net ton.

Docket 88120 (2)—Proposed to establish on limestone, natural, ground or pulverized, unburned, carload, minimum weight 60,000 lbs. from Woodville, O., to Gypsum, O., open cars, 189 cents per net ton; closed cars, 213 cents per net ton.

ILLINOIS FREIGHT ASSOCIATION

Docket C.S.C. 799-C—Sand, gravel and crushed stone, between points in the Chicago Switching District. Proposed to publish in Tariff 21 series and E.J.&E. Tariff 46 Series the same rate as from Zone 1 to Chicago, Ill., namely 94 cents per net ton, as a maximum for two- and three-

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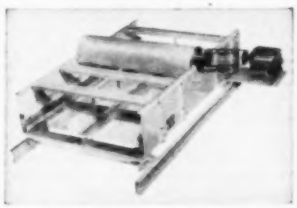

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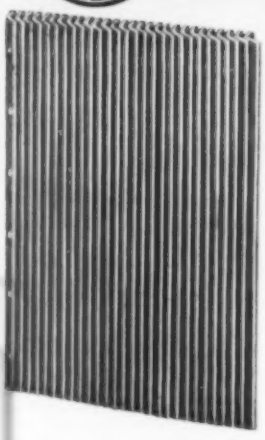

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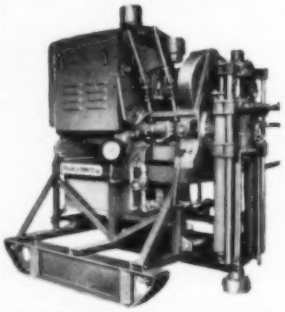

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line switching hauls in the Chicago Switching District, where higher rates are now in effect.

Docket IRC 511-1022—Proposed to establish on sand (other than bank, blast, core, engine, filtering, fire or furnace, foundry, glass grinding, polishing, loam, moulding or silica), gravel or strippings, sand or gravel pit, from Aurora, Ill., to Mendota, Ill., minimum weight marked capacity of car, except that when car is loaded to capacity, the actual weight (but in no case less than 40,000 lbs.) will apply. Present: 94 cents per ton of 2,000 lbs. (including ExParte increases). Proposed: 76 cents per ton of 2,000 lbs. (including ExParte increases).

NORTH PACIFIC COAST FREIGHT BUREAU DOCKETS

Docket NC-1730 (S)—Proposed to establish on limestone, crushed, carload from Cooper to Sumas and Wenatchee, Wash. Request for rate of 7½ cents to Sumas and 16 cents to Wenatchee, minimum 100,000 lbs., in open cars.

PACIFIC SOUTH COAST FREIGHT BUREAU PROPOSALS

Docket 1538 (Shipper)—Request for rate of 10 cents per hundredweight on fluxing lime, carload, from Diamond Springs, Calif., to San Francisco, Oakland, Niles and Pittsburg, Calif., and 22 cents per hundredweight to Los Angeles and Kaiser, Calif., minimum weight 50 tons.

Docket 1542 (Shipper)—Gypsum, ground, in gondola cars, carload from Willard, N. M., to Modesto, Stockton, and San Francisco, Calif. Request for rate of $5.00 per net ton, minimum 50 tons.

WEEKLY DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION PROPOSALS

Docket A 5929 (c)—Proposed to establish on limestone, ground pulverized, unburned, carload, 60,000 lbs., in open-top cars from Knoxville, Tenn., to Marmet, W. Va., 359 cents per net ton, subject to 162-6-8 increases.

Docket A 6151—It is proposed to reduce present rates on slag, carload, minimum weight 90 percent of marked capacity of car by publishing a rate of 382 cents per net ton from Siglo and Mt. Pleasant, Tenn., to Merton and Milwaukee, Wis. Not subject to X 162-6-8 increases.

SOUTHWESTERN FREIGHT BUREAU DOCKET

Docket 55273 (I)—Proposed to establish on gypsum, crude, or crushed (not ground) in bulk, carloads, Southard, Okla., and Sweetwater, Tex., to Brandon, Miss., following rates in cents per ton of 2,000 lbs., not subject to tariffs X-162-166-168 (minimum weight, 80,000 lbs.), in open-top cars not protected by tarpaulin or other protective covering: from Southard, $5.67; from Sweetwater, $5.45; in closed cars or open-top protected by tarpaulin or other protective covering: from Southard, $6.00; from Sweetwater, $5.78.

FREIGHT TRAFFIC COMMITTEE TRUNK LINE TERRITORY RAILROADS

Docket TL M-1164 (Shipper)—Stone, quarry waste, in open-top cars, carload minimum weight 90 percent of marked capaity of car, from Port Ewen, N. Y.,

to West Albany, N. Y., $1.10 per net ton, including all increases, in lieu of $2.92.

Docket TL M-1174 (Shipper) — Sand (other than ground or pulverized or naturally-bonded molding) and gravel, in open-top cars without tarpaulin or other protective covering, carload minimum weight 90 percent of marked capacity of car, etc., from Williams and Blue Bell, Pa., to Somerville, $1.83; to Blairstown, Morristown, Newton, $2.19; and to Hacketstown, N. J., $2.07 per net ton, including all increases.

Docket TL M-1175 (Carrier)—Crushed stone, in open-top cars without protective covering, carload, minimum weight 90 percent of marked capacity of car, etc. (For capacity of car see Agent M. A. Zenobia's ICC RER) from Oaks Corners, N. Y., to Kendaia, N. Y., $1.00 per net ton, including all increases, in lieu of $1.29.

Docket TL M-1177—Proposed to establish on crushed stone and screenings, in open-top cars, carload minimum weight 90 percent of marked capacity of car, from Blue Mount, Md., to Washington, D. C., $1.35 via P.R.R. direct, $1.65; via P.R.R.-Benning, D. C., B.&O.R.R. per net ton, including all increases.

FREIGHT TRAFFIC COMMITTEE TRUNK LINE TERRITORY RAILROADS

Docket Bulletin FTC 319—January 15, TL M-1184. Proposed to establish on crushed stone or screenings, in straight or mixed carloads, minimum weight 90 percent of marked capacity of car, from Hillcrest, Va., to Georgetown and Washington, D. C., $1.71 per net ton, including all increases.

Docket TL M-1189 (Shipper)—Proposed to establish on stone, screenings or dust, in closed or open-top cars, protected by tarpaulin or other protective coverings, carload minimum weight 60,000 lbs., from Gladhill, Pa., to Antietam, Md., $1.89 per net ton, including all increases.

WESTERN TRUNK LINE NEW APPLICATIONS

Docket TL M-1189 (Shipper)—Proposed rates on agricultural limestone, reflecting the same basis as is presently applicable from Quincy, Ill., to destinations in Illinois. From Huntington, Mo.

Docket X-E-41-1358 (Shipper)—Proposed to establish a rate of 275 cents per ton of 2,000 lbs. on gravel, minimum weight 90 percent of marked capacity of car from Pactolus, Colo., to Culbertson, Neb.

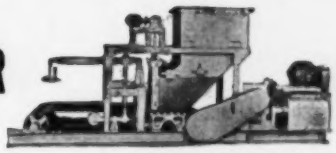
Docket X-E-41-1362 (Shipper) — Stone, broken, crushed or ground, including rip rap, quarry scraps or chips, minimum weight 90 percent of marked capacity of car but not less than 50,000 lbs., from Alexandria, S. D., to Sioux City, Ia. Proposed (permanent rates) in open cars, $1.90 per ton; closed cars, $2.05 per ton. Proposed (temporary rates—to expire December 31, 1951) in open cars, $1.65 per ton. Above rates include all Ex Parte increases.

Docket E-41-1359 (Shipper) — Crushed stone, carload, minimum weight 90 percent of marked capacity of car, from Green Bay, Wis., to Cologne and Glencoe, Minn.: Proposed (with Ex Parte increases): in closed cars, $4.03 per ton; in open cars, $3.54 per ton.

This is the Scale that "tells the tale"

for WEIGHING / FEEDING / RECORDING

for BLENDING / PROPORTIONING / MIXING

SCHAFFER  POIDOMETER

OVER 1200 now serving industry

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- Accurate weights are indispensable for efficient production and handling of raw and finished bulk materials.
- SCHAFFER Poidometers supply accurate weight-data automatically, with complete recording of material handled.
- These machines combine advanced engineering and sturdy construction to assure large output, maximum durability, and low-cost operation.
- Available with total weight recorders, and remote controls for showing and changing feed rate.

SCHAFFER POIDOMETER CO., 2828 Smallman St., Pittsburgh 22, Pa.

Cleveland VIBRATING SCREEN SECTIONS

Extra tonnage from replacement vibrating screen sections means *extra* profits. More volume per section can be obtained from Cleveland Wire screens because they are made of production tempered abrasion resisting steel—accurately woven. This steel is tough but ductile . . . designed to withstand the *shattering* action, day-in and day-out, of high tonnage vibrating units. Install a Cleveland Vibrating Screen Section now—and PROVE the difference.

We offer complete facilities for stamping, forming, crimping, rolling, soldering, welding and furnishing wire cloth in any form to meet specific requirements.

Write for Bulletin No. 6, illustrating types of hooked edges available for your vibrating equipment.

There's a CLEVELAND WIRE SCREEN for every purpose

THE CLEVELAND WIRE CLOTH & MFG. CO.
3576 E. 78th STREET · CLEVELAND 5, OHIO

The Riverside Cement Company plans construction of a $70,000 sacking plant and distribution center at San Diego. The firm has leased 100,000 sq. ft. of tidelands from the San Diego Harbor Department on which it plans to erect the new plant. Although no export business is contemplated, sufficient property has been acquired to build dock facilities.

Riprap for Grand Coulee dam's spillway is seen being placed by an Owens RA Rock Grapple. The riprap is hard granite, quarried about a half mile downstream. Placed in three courses of 3 tons, 4½ tons and 6 to 40 tons, the riprap serves to prevent washing and to break up the waves from the dam's spillway.

Dravo's 1950 Safety Record Best in Firm's History

Dravo Corporation, Pittsburgh, Pa., and its subsidiaries had the best safety record in the corporation's history during 1950, according to a company announcement. The 1950 record, an improvement of 40 percent over that of 1949, showed that company employees worked 155,000 man-hours per lost-time injury. In addition, the accident severity rate was substantially less than in previous years. Singled out for special honors were the Union Barge Line Corporation and the Contracting Division.

Katie Ellen Makes Way For Strong, Young Diesel

Another veteran of the Wabash River, the venerable *Katie Ellen*, passed into history recently when a new towboat went into service for the Mount Carmel Sand and Gravel Company at Mount Carmel, Ill.

A. C. Rehnquist, superintendent, stated that the new craft is an all-steel diesel pusher, smaller, but much more powerful than the *Katie Ellen*. No stern-wheeler like the *Katie Ellen*, she is driven by a propeller. We have not learned the name of the newcomer—perhaps it's the *Powerful Katrinka?*

...Packs Plenty of *PUNCH!*

"Cape Ann" FORGED STEEL DROP BALL

- RUGGED DESIGN
- GREATER IMPACT
- ECONOMICAL

This is the "rock-buster" preferred by many leading quarry operators.

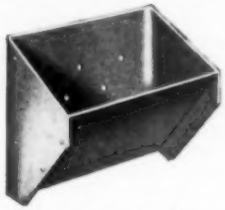
The "Cape Ann" Drop Ball has a forged connecting link, protected by a deep recess, adaptable for swivel or shackle. Strong alloy steel pin. Minimum cable replacements. Furnished complete as shown. Write for details.

2000 to 8000 lbs.

CAPE ANN ANCHOR & FORGE CO.
Gloucester • Massachusetts

"... must order more

STANDARD ELEVATOR BUCKETS"

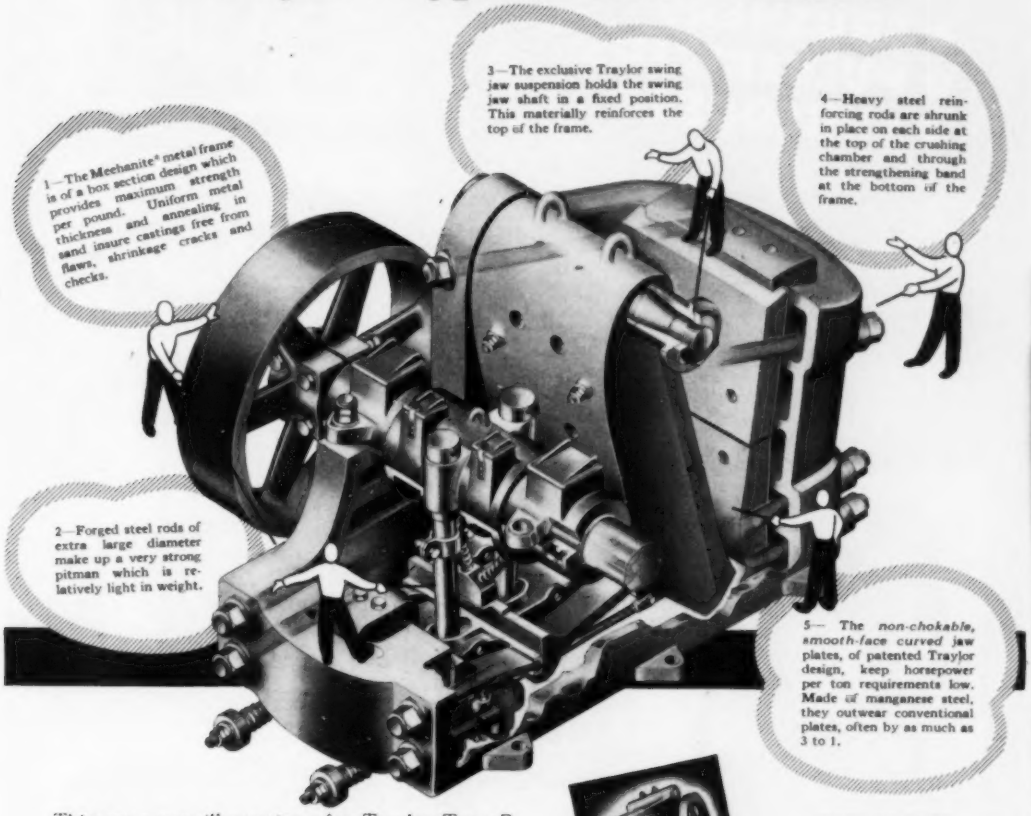


...that's a standard memo for plant operators needing long-service, economical replacement buckets.

STANDARD Buckets are made in standardized designs, or to your individual requirements. Heavy duty construction, either welded or riveted. Prompt service on all orders. Write for prices giving quantity, length, depth, projection, gauge of steel and type of bucket wanted.

STANDARD METAL MFG. CO.
Malinta, Ohio

"Advanced Design" is written all over a Traylor Type R Jaw Crusher


1—The Meehanite® metal frame is of a box section design which provides maximum strength per pound. Uniform metal thickness and annealing in sand insure castings free from flaws, shrinkage cracks and checks.
2—Forged steel rods of extra large diameter make up a very strong pitman which is relatively light in weight.
3—The exclusive Traylor swing jaw suspension holds the swing jaw shaft in a fixed position. This materially reinforces the top of the frame.
4—Heavy steel reinforcing rods are shrunk in place on each side at the top of the crushing chamber and through the strengthening band at the bottom of the frame.
5—The non-chokable, smooth-face curved jaw plates, of patented Traylor design, keep horsepower per ton requirements low. Made of manganese steel, they outwear conventional plates, often by as much as 3 to 1.

This cut-a-way illustration of a Traylor Type R Jaw Crusher exposes its many advanced design features. Each of these many features contribute to larger profits by increasing production while cutting power and maintenance costs. The Traylor Type R Crusher is a modern breaker of massive proportions and sturdy construction . . . designed for heavy-duty service under the most severe operating conditions. For more complete information on one of the best primary crushers available, mail coupon for free bulletin on a Traylor Type R Jaw Crusher.

Traylor

Rotary Kilns, Coolers and Dryers · Grinding Mills
Jaw, Reduction and Gyratory Crushers · Crushing Rolls

MAIL COUPON FOR COMPLETE INFORMATION

TRAYLOR ENGINEERING & MANUFACTURING CO.
328 MILL ST., ALLENTOWN, PA.

I would like to have complete information on Traylor Type R Jaw Crusher.

Name _____

Company _____

Address _____

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SALES OFFICES: New York, N.Y.; Chicago, Ill., Los Angeles, Calif.
Canadian Mfrs: Canadian Vickers, Ltd. Montreal, P.Q.

A "TRAYLOR" LEADS TO GREATER PROFITS

Jeffrey makes a complete line of

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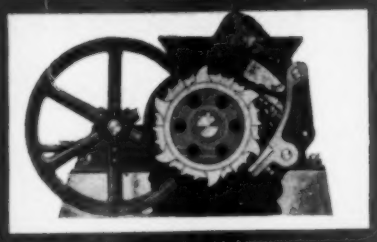
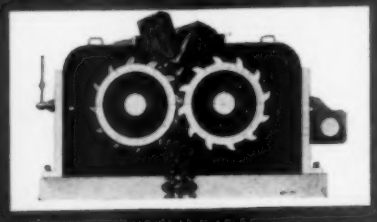
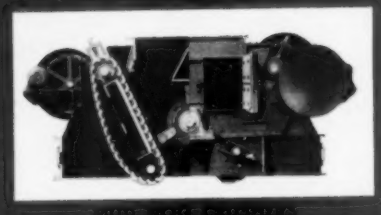
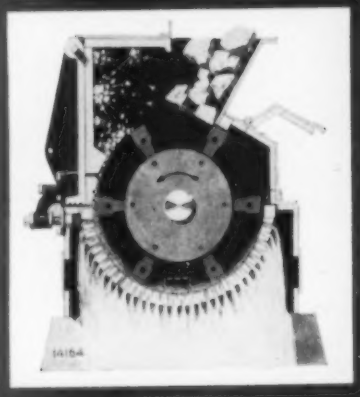
- PULVERIZERS
- SHREDDERS









CAPACITIES 1 TO 1200 TONS PER HOUR

RIGID AND SWING HAMMER CRUSHERS PULVERIZERS • SHREDDERS

LITERATURE ON REQUEST

THE JEFFREY MANUFACTURING COMPANY

917 North Fourth St., Columbus 16, Ohio

ESTABLISHED 1877

Complete Line of Material Handling, Processing and Mining Equipment

This Owner Says "SAVES US MONEY"

Roy C. More — **More Sand Company** Not Inc. — Margaret G. More

626 West 6th Street
Telephone 1000
Junction City, Kansas

November 29, 1950

Thomas Foundries, Inc.,
Birmingham, Alabama

Gentlemen:

Our Thomas DURABLE Pump is producing about 20% more sand and gravel than the well known manganese steel pump that it replaced.

After running through the 1950 pumping season, during which it has required no repairs, it shows very little wear. Manganese pumps, based on our previous experience, would have required substantial repairs.

Yours is a wonderful pump. It is doing a grand job. We are glad that we bought it because it is definitely saving us money.

MORE SAND COMPANY
Roy More

THOMAS DURABLE DREDGE PUMP—

ESPECIALLY DESIGNED TO BE MADE OF METAL HIGHLY RESISTANT TO ABRASION

Roy More's pleasant experience referred to in his letter above is due to the following 3 outstanding features of a Thomas Dredge pump:

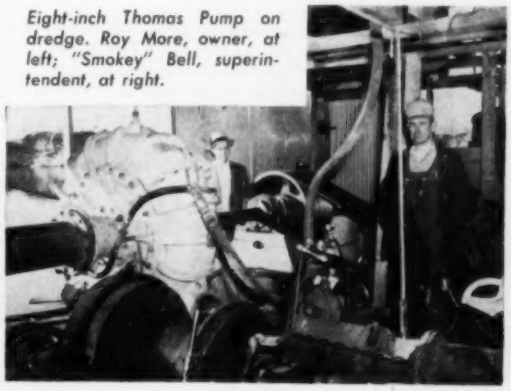
1. DURABILITY: Outlasts other pumps by 4 to 10 times because it is made of special, hard metal highly resistant to abrasion. Full advantages of this metal are available in a Thomas Pump because it is especially designed for the purpose.

2. EFFICIENCY: Operates at sustained high pumping efficiency throughout its long life due to continued close working clearances.

3. RUGGEDNESS: Handles large rock and solids without damage. Pump liner protected against breakage by special Thomas-designed shock-absorbing water jacket between liner and outer casing. Field experience shows liner can wear paper-thin without breakage, thus adding months of low-cost, trouble-free pumping service.

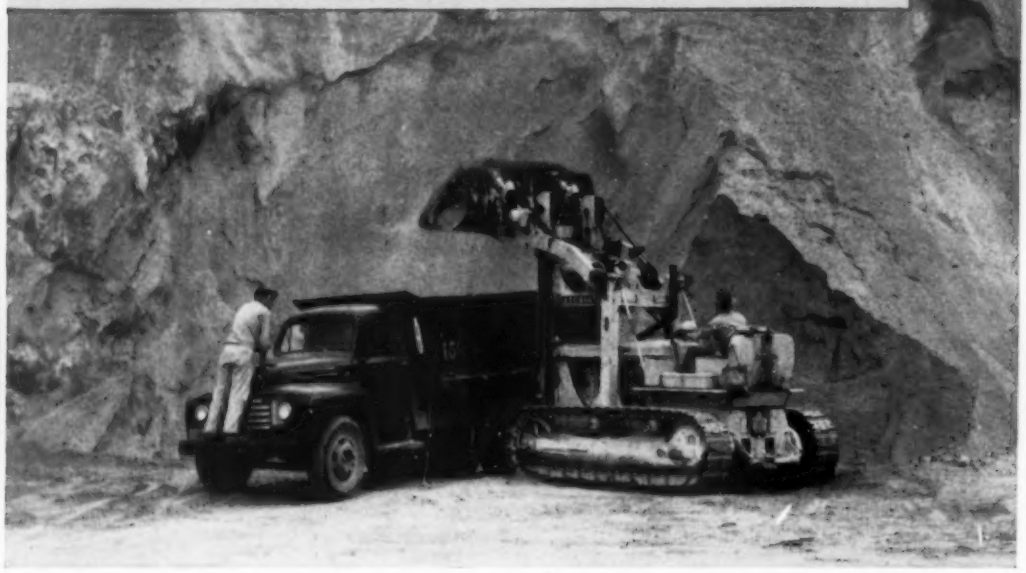
If you are interested in reduced costs per yard or per ton of material handled, write for illustrated circular. Address Thomas Foundries, Inc., Birmingham 1, Ala.

More Sand Company dredge in foreground. Washing and screening plant in background.



Eight-inch Thomas Pump on dredge. Roy More, owner, at left; "Smokey" Bell, superintendent, at right.

PRODUCTION...*KINGSIZE*...
with a TRAXCAVATOR in the Pit!



Whether you're handling hard, in-place material or working from a stock-pile, big T6 TRAXCAVATOR capacity and advantages insure kingsize production!

This California road-gravel pit keeps 10½ cu. yd. trucks on the move with a T6 TRAXCAVATOR on the loading end. The trucks are in, loaded and out in 3 minutes!

Powered by "Caterpillar" Diesel Tractors, TRAXCAVATORS are long on "work-done" . . . short on "work-costs". Broad ground gripping tracks crowd a heaped load into the strong, reinforced bucket on every pass . . . powerful, fast cable action hoists the load as the unit pivots . . . perfect match-and-balance allows haul in high gear . . . sure, positive dumping gets rid of the load in a hurry. TRAXCAVATORS make this a time-busting sequence . . . move more materials . . . make more money.

In addition to their digging and loading duties, versatile TRAXCAVATORS handle haul-road building and maintenance, stripping and clean-up work. Ask your TRACKSON-"Caterpillar" Dealer to show you a TRAXCAVATOR at work — 5 sizes (from ½ to 4 cu. yds.) to fit your job needs exactly. You can see for yourself how these agile units cut costs in pit or quarry. Your dealer can show you the many mechanical features, too . . . or write to TRACKSON COMPANY, Dept, PQ-31, Milwaukee 1, Wisconsin.

TRAXCAVATOR® ***The Original Tractor Excavator***

Which wire rope dollar buys the most service?

Isn't it true that when you purchase wire rope, you're actually buying service? Buying what the wire rope will do for you? Buying units of work?

The rope dollar that buys the most units of work has been wisely spent. Can you tell which brand of rope is giving you the most for your money? There are many users who can—by keeping records of wire-rope performance. They know what constitutes good, average service in terms of ton-miles, yards of rock moved, etc. When a certain brand gives better-than-average service over a period of years, they know they're getting a big return on the dollars spent for that brand.

Their figures prove it. That's why Bethlehem urges the keeping of records—records that show rope costs per unit of work. For we feel that in any such comparisons, Bethlehem rope will stand out from the crowd . . . in a way that will please the user's pocketbook.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

LET YOUR RECORDS TELL YOU!

A Sunday Punch Every Day in the Week

Whether it's moving half a hillside or just blasting a few rocks, you can count on AMERICAN Explosives to produce a shot that brings down the right amount of earth and rock in the right spot. You get these results because every case of AMERICAN Explosives is backed by a combination of intensive research, strict laboratory control and modern methods of production.

AMERICAN Explosives are available in a wide range of strengths, velocities and densities to allow maximum flexibility in your operations. You can get these reliable explosives from district offices and distributing magazines located in key spots throughout the country.

For efficient, low cost results make your next order American.

Capable Field Engineers are Available at Your Call

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FORD TRUCK ECONOMY RUN

OKLAHOMA
Report No. 2703

On Bottom Land or Concrete Highways—

"My 2-ton dump hauls tough loads for only 3½¢ a mile"

—Says L. C. CLINGAN,
Sand and Gravel Operator, Lawton, Oklahoma

He drove a 1950 Ford F-6 Dump in Ford's nationwide Economy Run. He says, "I proved for myself that Fords are economical to run. They carry more load on less gas."

Low cost hauling brightens the profit picture on any construction job. And L. C. Clingan, who owns three Ford Trucks and kept cost records in Ford's Economy Run, says—"In six months, I hauled sand and gravel on my F-6 a total of 25,271 miles, making 1,566 stops. Average load was 13,500 lbs. The total spent for gas, oil and service was $882.49—or 3.49 cents per mile."

Like others who rely on Ford to handle tough loads at low cost, you'll also appreciate the money-saving Ford Dealer *service*. And, for more facts on the trucks that last longer and save you money every mile—mail the attached coupon.

On the job every day, Clingan's trucks help keep ready-mix concrete plants operating on schedule. He says, "My Ford Trucks deliver more loads by making three extra trips in a day. I get more work done per dollar."

This new Ford F-6 Dump for '51, like Clingan's truck, is built to fit your power needs. Choice of 95-h.p. Six, 100-h.p. V-8 or 110-h.p. Big Six. Three wheelbases—134, 158 and 176 in. And remember, there's an economical Ford Truck to fit *your* job—over 180 models to choose from.

Ford Trucking Costs Less Because—
FORD TRUCKS LAST LONGER

Using latest registration data on 6,592,000 trucks, life insurance experts prove Ford Trucks last longer!

POWER PILOT
helps
CONSTRUCTION MEN
hold down hauling costs

The Ford Truck Power Pilot is a simpler, fully-proven way of getting the most power from the least gas. It automatically meters and fires the right amount of gas, at precisely the right instant, to match constantly changing speed, load and power requirements.

Unlike conventional systems, the Power Pilot uses one control instead of two, yet is designed to synchronize firing twice as accurately. You can use regular gas . . . you get no-knock performance. Only Ford in the low-price field gives you Power Pilot Economy!

MAIL THIS COUPON TODAY!

FORD Division of FORD MOTOR COMPANY
3253 Schaefer Rd., Dearborn, Mich.

Send me without charge or obligation, detail specifications on Ford Trucks for 1951.

Full Line ☐ Heavy Duty Models ☐
Light Models ☐ Extra Heavy Duty Models ☐

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Address_____

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HARD FACING WHERE IT PAYS

IT'S ALL DONE WITH WEAR-ARC

Elevator buckets of cast steel (annealed) are hard faced on the top wearing edge with WEAR-ARC 12 to increase life against impact and abrasion. Ninety-five pound hammers for the impactor, 10 lb. and 20 lb. hammers for the hammermills, and dipper and shovel teeth are all built up with WEAR-ARC WH and hard faced with WEAR-ARC 12 to increase life as much as three times under severe impact and abrasion.

To reclaim worn equipment and hard face against excessive wear, you will find one, or a combination of two, of the seven basic WEAR-ARC hard facing electrodes does the best job . . . increases life as much as four times or more.

WEAR-ARC WH is ideal for build up on manganese steel; WEAR-ARC 12 for providing that hard wearing surface.

Ask for bulletin No. 10550, illustrating and describing properties and welding procedures for the complete line.

"I Like the rod that comes in the RED can"

SEE YOUR NEAREST ALLOY RODS DISTRIBUTOR

ARCALOY for stainless steel
NICKEL-ARC for cast iron
TOOL-ARC for tool steel
WEAR-ARC for hard facing
BRONZE-ARC for general use

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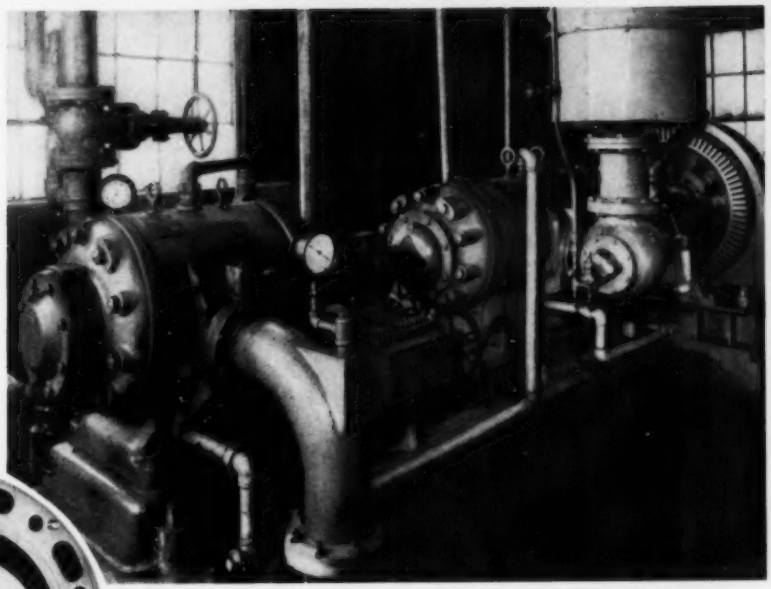
DRY MATERIAL CONVEYING SYSTEMS AND COOLERS
COMPRESSORS AND VACUUM PUMPS
FEEDERS, AND ASSOCIATED EQUIPMENT

sound
lungs
for
industry



Two-stage rotary compressor. Capacity 1665 c.f.m., 100-lb. pressure.

FULLER rotary compressors

Fuller Rotary Compressors are first choice for dependability in many plants the country over. That's only natural, because Fuller engineers and builds for trouble-free, long-term, low-cost operation. Fuller Rotary Compressors have but few moving parts . . . rotor, bearings, and blades. They need little attention, infrequent inspection. Maintenance is low . . . there are no valves to leak or seats to grind; blades automatically compensate for wear. *Full capacity is maintained for the life of the machine.*

It's this lifetime of new machine efficiency that makes them the logical, economical choice of many engineers and plant superintendents . . . means many repeat orders for Fuller Rotaries. They can't be beat as prime factors in reducing installation as well as operating costs.

A Fuller engineer will be glad to show you how Fuller Rotary Compressors can go on your payroll at the minimum wage. Get in touch with him today . . . or write for Bulletin C-5, which describes Fuller Rotaries in detail.

FULLER COMPANY, Catasauqua, Pa. · 120 So. LaSalle St., Chicago 3 · 420 Chancery Bldg., San Francisco 4

C-203

Loading stone from the quarry, this GM Diesel-powered 1½-yard Koehring handles 150 tons an hour on less than 4½ gallons of fuel.

A 4-cylinder GM Series 71 Diesel, replacing a gasoline engine, stepped up the capacity of this 1¼-yard machine, and cut fuel costs two-thirds.

20% HIGHER PRODUCTION at ⅓ the fuel cost

Cowan Stone Company, Cowan, Tennessee, wanted another make of Diesel when they bought their Koehring 605 shovel in 1948. But it was readily available with a GM Diesel engine, so they took it.

And when they recently converted a 21-year-old $1\frac{1}{4}$-yard shovel from gasoline to Diesel power, what engine do you think they installed? Another GM Diesel, of course!

With its smooth, steady flow of power, this veteran machine now stock-piles 125 yards an hour—approximately 20% more than it did before—and uses only 3 gallons of Diesel fuel per hour as compared to 7 gallons of gas.

Figure the savings in terms of your own operation. Then call in your nearby GM Diesel distributor. Ask him to show you how simple and economical it is to convert to this modern 2-cycle Diesel power.

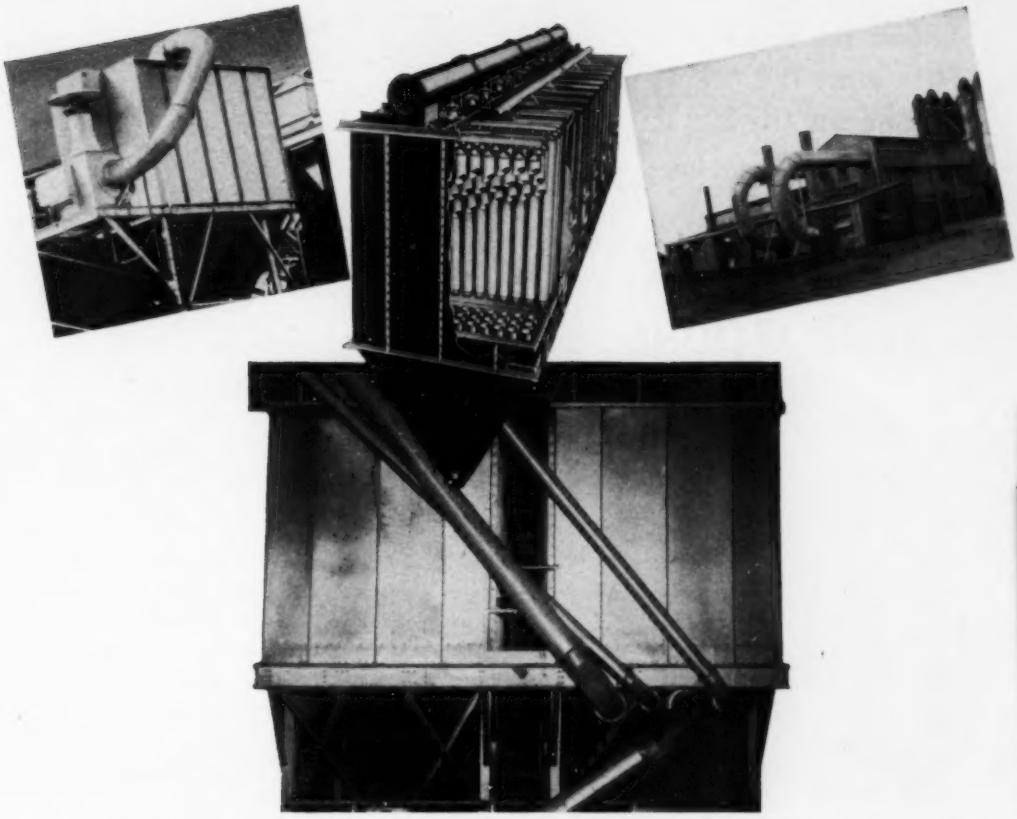
DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES...(6-n) 275 H.P. **DETROIT 28, MICHIGAN** MULTIPLE UNITS...(6-n) 870 H.P.

GENERAL MOTORS

GM GENERAL MOTORS DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK



Get A Bigger Profit From Your Dust Control

Of all the major types of dust and fume collection modern automatic bag type as developed by Norblo is the most widely useful and adaptable for heavy duty in large scale production processes. Norblo equipment is profitable to use, low in maintenance and operating cost.

Norblo bag type based on compartments of 78 cylindrical bags, progressively shaken, is adjustable for varying dust load without shutting down. The original planned efficiency of collection based on cloth area is as high as or higher than any other construction actually attained in practice.

Norblo automatic bag type dust and fume collection is fully described in Bulletin 164-2—write for it.

Norblo

Engineered Dust Collection Systems for All Industries

THE NORTHERN BLOWER COMPANY

6407 BARBERTON AVE. • CLEVELAND 2, OHIO

To Give You Bigger Performance This ¾ Yard Bay City Is

BUILT TO BIG MACHINE PROPORTIONS

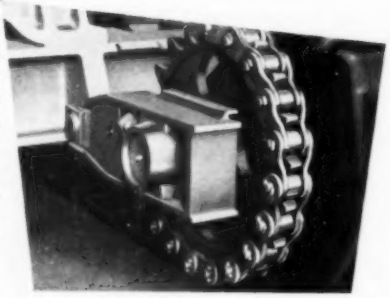
When you're in the market for a ¾ yard machine . . . look at the BAY CITY. You'll find one working near you and you'll find it to be a bigger ¾ yard machine that will give you bigger performance because it is built to big machine proportions. Power packed and nicely balanced, the Model 45 has a crane rating of 14 tons and weighs 22 tons as a shovel. It is fast and sturdy to give you that extra value which means larger profit possibilities. Why not write us for latest catalog or see your nearest BAY CITY dealer.

BAY CITY SHOVELS, INC.
BAY CITY, MICHIGAN

CHECK LIST

- Fully Convertible
- Long, Wide Crawlers
- Alloy Cast Bases
- Tandem Drums
- Power Booster Clutches
- High Line Speeds
- Wide Vision Cab
- Pin-Connected Boom

The outboard bearing assembly — a standard BAY CITY design feature — is pivoted to the H-beam axle and provides a third bearing for the crawler drive shaft. A short, sturdy adjusting bolt, locked in position, is in compression at all times and is shielded by a grease filled pocket. Forged adjusting boxes have bronze bearings arranged with grease pockets which prevents entrance of dirt.



182

BAY CITY

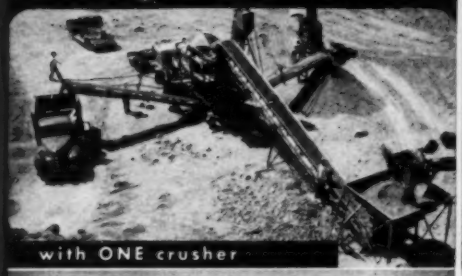
SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

You Name It!

We HAVE IT!

Portable (and stationary) rock and gravel crushing, screening and washing plants for every requirement. High speed jaw and roll crushers, with matching conveyors and screens, combined as you want them in a plant that will give you "More Rock for Less Money."

Single-Unit Plants



with ONE crusher

with TWO crushers

with TWO crushers

Multiple-Unit Plants

TWO units... TWO crushers

TWO units... THREE crushers

THREE units... FIVE crushers

Yes, whatever your particular production problem, you will find the answer in an Austin-Western plant. Our engineering department will gladly submit sketches and estimates.

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U. S. A.

Austin-Western

the fast,

low-cost way

to get

worn teeth

back in service!

1. Worn tooth . . . 2. Plus AMSCO Tooth Repointer . . . 3. Equals like-new tooth—ready for service!

AMSCO® tooth repointers

AMSCO Repointer Bars

3 teeth partially rebuilt with AMSCO Repointer Bars to show sectional view of welding method. These Repointer, or Wedge Bars, are also made in many shapes and sizes. Apply AMSCO Economy Hardface to the rebuilt tooth *—for as much as 3 times longer service!*

● Here's a typical example of a badly worn dipper tooth completely restored to service . . . simply by welding on the AMSCO Cast-To-Size Tooth Repointer. The result is like-new service life and efficiency, plus a long-wearing tooth of Manganese Steel—the steel that actually work-hardens in service. Cost? *Far less than replacement!*

Wherever equipment has teeth that wear, more and more owners are using money-saving AMSCO Tooth Repointers . . . available in a wide variety of styles and sizes.

Get all the facts! Write today for Bulletin W-10-A —showing complete instructions for use.

put LIFE into service with

AMSCO®

WELDING PRODUCTS

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION

396 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.

Sensational

new 600-cfm PORTABLE COMPRESSOR

using a new advanced-design Rotary Compressor

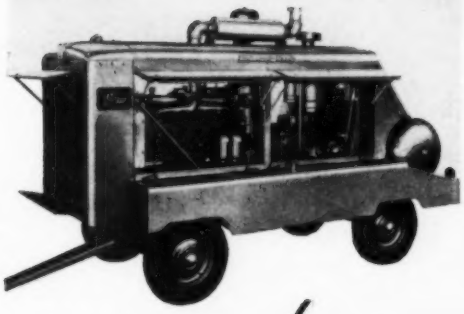
Ingersoll-Rand

MOBIL-AIR 600

AIR POWER

GYRO-FLOW

Years ahead of any other large capacity portable



Weighs only 9500 lbs ready to run

- Amazing new GYRO-FLOW compressor . . . two-stage, oil-cooled rotary type without valves . . . without pistons, rings or rods . . . without clutch.
- Never gets hot . . . discharge temperatures less than 200°F under normal operating conditions.
- Matched to powerful, nationally-known General Motors diesel engine . . . takes full advantage of modern speeds.
- I-R AIR-GLIDE Capacity Control . . . the only automatic, step-less regulator that controls the air output smoothly over the full range from 0 to 100% capacity . . . all within a 10-pound pressure range.
- Weighs only 9500 pounds ready to run . . . as much as 20% less than other big-capacity portables.
- **Gets maximum work out of two of the most powerful wagon drills . . . delivers full 600 cfm at 100 psi pressure.**

by **Ingersoll-Rand**

11 BROADWAY, NEW YORK 4, N. Y.

905-2

The portable compressor builder that many times before has set new standards

- First Two-Stage Air-Cooled Portable Compressor
- First 500-cfm Portable that was really portable
- First Automatic Speed-Control of Capacity
- First and only MOBIL-AIR.

Write or call your nearest Ingersoll-Rand representative for the full story.

Bowling 'em over
AT BOWLING GREEN

POWER FOR GENERATOR is supplied by International UD-18A in left foreground, while its twin brother powers the primary crusher.

THE SECONDARY CRUSHER gets its power from a third UD-18A shown in right background.

Gary Brothers, Bowling Green, Kentucky, turn out 100 tons of crushed rock per hour, helped by three International UD-18A's

When Gary Brothers planned and equipped their new mill near Bowling Green, Kentucky, they went a hundred per cent International for cost-cutting economy and long-lasting dependability.

Now they're bowling 'em over with production —100 tons of crushed rock per hour.

International UD-18A's power the generator, the primary crusher, and the secondary crusher. Gary Brothers also operate a shovel and compressor, both International-powered, and their trucks are Internationals, too.

You can't beat International Power for real performance on your operation. Let your International Industrial Distributor or Power Unit Dealer prove it to you.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILL.

INTERNATIONAL **POWER THAT PAYS**

LIPPMANN SELF PROPELLED DUAL CRUSHING PLANT

Works 12 pits in 5 months

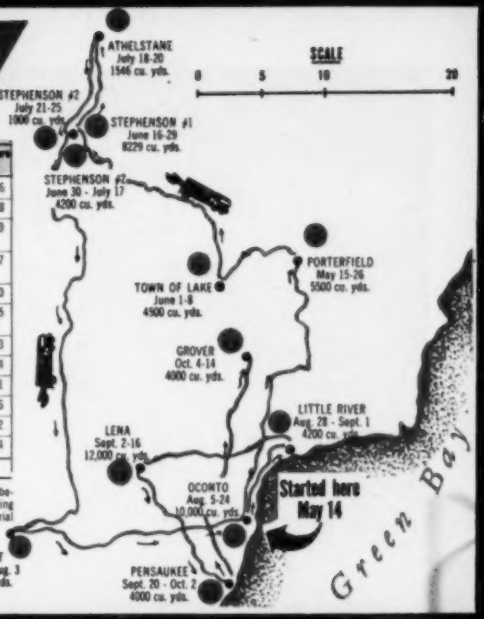
DRIVES 219 MI. HITS 1100 YARDS PER DAY

with *Circuit Rider*

May 14 to October 14, 1950
Owned by Belongia Construction Co., Oconto, Wisconsin

Job No.	Site	Distance Traveled	Arrival Date	Cu. Yds. Produced	Departure Date
1	Porterfield	22 mi.	May 15	5,500	May 26
2	Town of Lake	7 mi.	June 1	4,500	June 8
3	Stephenson Pit No. 1	18 mi.	June 16	8,229	June 29
4	Stephenson Pit No. 2	2 mi.	June 30	4,200	July 17
5	Athelstane	12 mi.	July 18	1,546	July 20
6	Stephenson Pit No. 2	12 mi.	July 21	1,000	July 25
7	Gillett	60 mi.	July 27	4,500	Aug. 3
8	Oconto	26 mi.	Aug. 5	10,000	Aug. 24
9	Little River	6 mi.	Aug. 28	4,200	Sept. 1
10	Lena	14 mi.	Sept. 2	12,000	Sept. 16
11	Pensaukee	18 mi.	Sept. 20	4,000	Oct. 2
12	Grover	22 mi.	Oct. 4	4,000	Oct. 14
	Totals	219 mi.		63,725*	

*On every job, plant was not operating part of the time because trucks had to be used for fill jobs. In addition, during this period, plant produced another 10,000 yards of material for the home yard which is not shown.



SELF-PROPELLED CRUSHING PLANT

Belongia Construction Co. Easily Covers 60-Mile Radius Around Oconto, Wis. with Lippmann Self-Propelled Dual Crushing Plant. Read How You, Too, Can Move Ahead to Greater Profits!

Just think of it! You're working in a pit . . . the job is almost done . . . and you've a chance for another job 50 miles away, but it's a tight schedule.

How would you like to climb into a *self-propelled* crushing plant . . . pull out of the pit . . . drive onto the highway . . . and wheel along to the next job *at 18 mph?*

Then picture yourself driving into the new pit in your Lippmann Circuit Rider . . . and *four minutes* after you leave the highway, you're loading a truck with stone.

Nice profitable picture, isn't it?

And that's just what Belongia Construction Co., Oconto, Wis., does with their Self-Propelled Lippmann Circuit Rider, the complete, all-in-one dual crushing and screening plant.

HITS 1100 YARDS PER DAY!

Turning out ¾ in. stone, they consistently were able to hit 1100 yards in an 8-10 hour day. Because in the pit, Circuit Rider easily follows the shovel — there are no separate bins, conveyors or engines to set up and adjust . . . no jacking, leveling or excavating necessary on the plant itself.

Check the "log" of this typical Lippmann Circuit Rider owner above. See for yourself why leading operators find it pays to own the only self-propelled dual crushing and screening plant on the market today.

2005

You can put yourself in this picture— Belongia shovel-feeds self-contained Circuit Rider from one end, discharges into trucks at the other.

LEW

FOR ALL THE FACTS on the complete Lippmann line for pits, mines and quarries write for: Grizzly King Jaw Crushers (Bulletin 1100), Screen-All Vibrating Screens (1200), Pulverizers (1160), Belt Conveyors (1400), Gyra-Gnome Secondary Crushers, Circuit Rider Self-Propelled Crushing Plants, Portable Washing Plants, Apron Feeders (1450).

LIPPMANN ENGINEERING WORKS

4603 West Mitchell St., Milwaukee 14, Wisconsin

PAYLOADERS

Pay Off ANY Place

Sand, gravel, aglime, crushed stone, gypsum . . . or any other bulk material can be loaded, carried or stock-piled fast and economically with PAY-LOADERS. These special tractor shovels are complete Hough-built tractors *and* shovels having exclusive profit-making features and advantages that enable them to do more work, more kinds of work, and do it safer and better.

PAYLOADERS give you full-reversing transmissions with several speeds both forward *and* reverse . . . operator location high and forward for fullest visibility . . . engine location over drive wheels for maximum stability and traction . . . automatic, quick tip-back of bucket for real digging power and spillage prevention.

PAYLOADER unit-design also offers you unit responsibility, and there is a complete range of sizes from 12 cu. ft. up to 1½ cu. yds. from which to choose. Your Hough Distributor will gladly give you full PAYLOADER facts or write THE FRANK G. HOUGH CO., 750 Sunnyside Avenue, Libertyville, Illinois.

WRITE for full information about any PAYLOADER — the 1½ yd. 4-wheel drive Model HM; the 1¼ yd. HL; the ¾ yd. HF; the ½ yd. HE; the 12 cu. ft. HA.

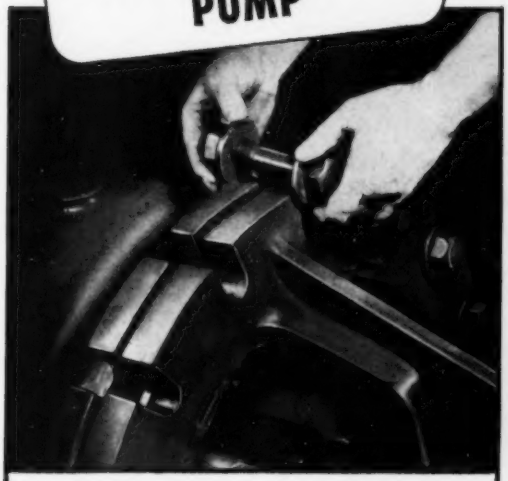
SAY HUFF

PAYLOADER®

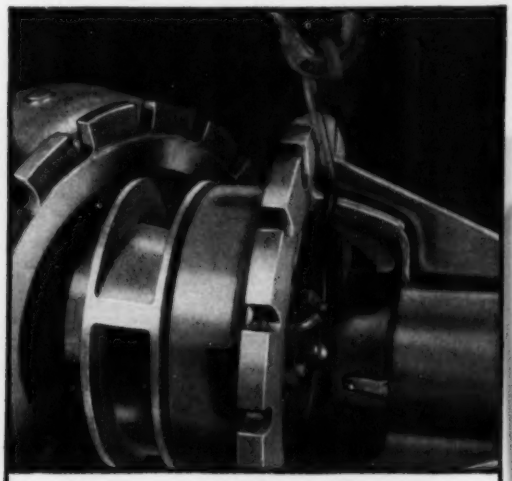
THE FRANK G. HOUGH CO. . . . SINCE 1920

Remove Rotating Element in 5 Minutes!

ALLIS-CHALMERS SOLIDS HANDLING PUMP



1. Remove Casing Bolts lift and disconnect drive. Just loosen bolts and bolt assembly from slot. Bolt, nut and washers are still connected for easy reassembly.



2. Swing Out Rotating Element. Neither suction nor discharge piping need be disturbed. All wearing parts are fully accessible for inspection or servicing.

THE PUMP IS BACK IN SERVICE IN LESS THAN A HALF HOUR

QUICK, EASY SERVICE AND LONG RUNS between servicings are the two things operators want most in solids handling pumps. You can see for yourself how quick and easy service is with an Allis-Chalmers Solids Handling pump.

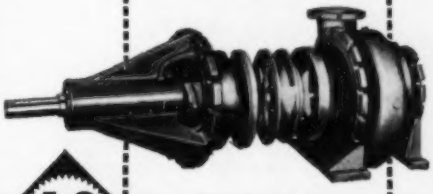
You get long life, too, because Allis-Chalmers Solids Handling Pumps are made of special hard *Allisite* alloy . . . because they have thick sections and heavy parts throughout . . . and because they are application engineered by specialists who know solids handling problems and how to solve them.

Get complete information on Allis-Chalmers Solids Handling pumps from your nearest Allis-Chalmers Sales Office. Or write for Bulletin 08B6381.

Allis-Chalmers
Milwaukee 1, Wis.

A-3216

Allisite is an Allis-Chalmers trademark.



ONLY FIVE WEARING PARTS

Shaft sleeve, impeller, casing, two wear plates. All easy to handle and easy to replace.

ALLIS-CHALMERS

SILICA FLINT

CLASSIFY ABRASIVES with

QUARTZ FELDSPAR

RAYMOND
Double Whizzer
SEPARATOR
Showing standard construction for long and satisfactory service handling normally abrasive materials

Special abrasion-resistant Raymond Separators do an outstanding job in classifying highly abrasive materials, such as flint, feldspar, quartz, and silica sand.

•

These Separators are specially built for unusually hard service. Whizzer blades and whizzer cones are built of abrasion-resistant alloy castings. In addition, the unit is completely lined internally with replaceable steel plate liners.

•

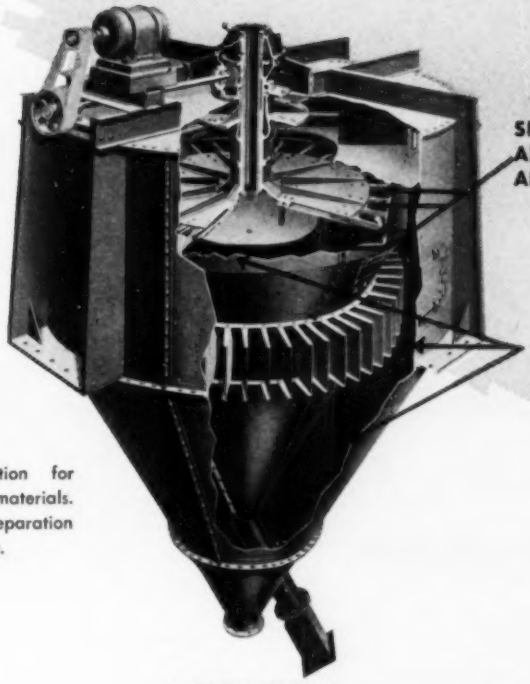
As a result, Raymond Separators show substantial savings in terms of greatly reduced repair expense, and much longer runs without shutdown. Per ton costs are greatly reduced.

•

Raymond Mechanical Air Separators are available with Single or Double Whizzer, and in commercial sizes from 4'0" to 18'0" in diameter —also a 30-Inch Separator and 10-Inch Laboratory Separator. Whatever material you are handling it pays to specify Raymond Separators for economical performance.

COMBUSTION ENGINEERING
RAYMOND PULVERIZER DIVISION
1321 North Branch Street Chicago 22, Ill.

RAYMOND *WHIZZER* SEPARATORS



SPECIAL ABRASION RESISTANT ALLOY CASTINGS

COMPLETELY LINED INTERNALLY

RAYMOND
Single Whizzer
SEPARATOR

Showing Special construction for classifying highly abrasive materials. Used for medium fineness separation and for dedusting operations.

TYPICAL PRODUCTS

- SILICA SAND*
- SILICATE MATERIALS*
- CEMENT CLINKER
- CEMENT RAW MIX
- HYDRATED LIME
- GYPSUM
- FLINT*
- FELDSPAR*
- QUARTZ*

*Indicates materials for which special construction is recommended.

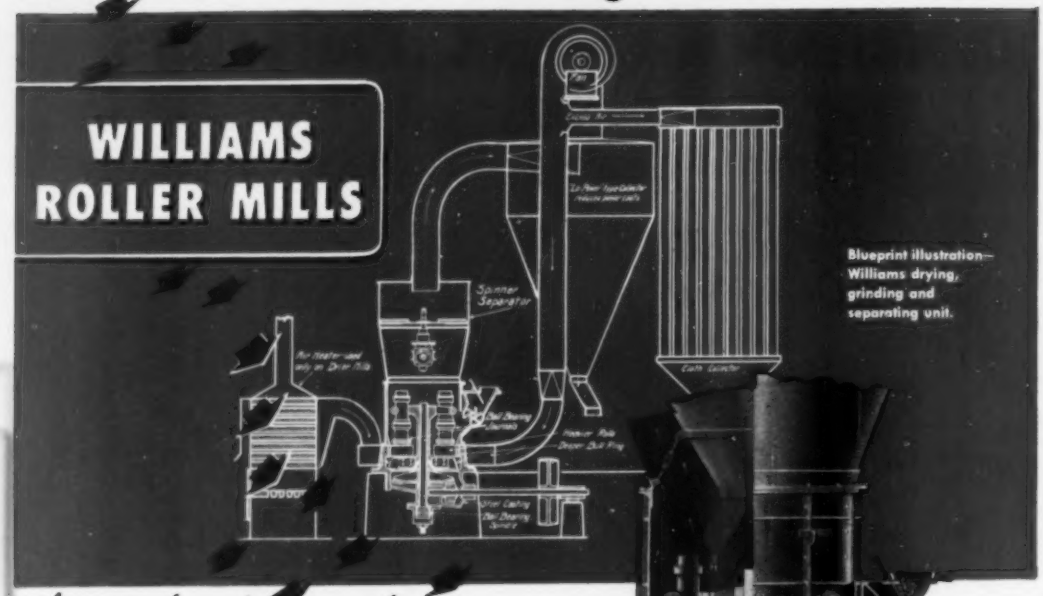
-SUPERHEATER, INC.

Sales Offices in
Principal Cities

SINCE 1887

For those Fine Grinding Jobs . . .

WILLIAMS ROLLER MILLS



Blueprint illustration—Williams drying, grinding and separating unit.

let's look at the record

LIMESTONE

Many Williams Roller Mills are satisfactorily grinding limestone to 99% 325 mesh or 85% 200 mesh and for all other commercial uses finer than 40 mesh.

LIME

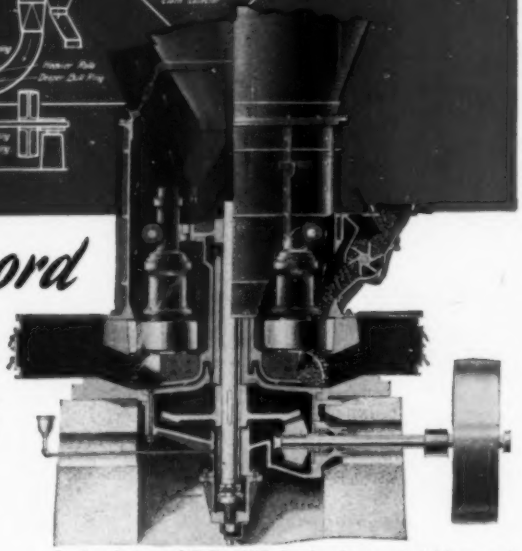
Both burned and hydrated lime can be satisfactorily processed in Williams Roller or Impact Mills. Automatic throw-out rejects impurities and unburned cores. Dustless operation.

CLAYS, TALC, KAOLIN

Can be reduced to any fineness from 40 mesh to micron sizes. Impurities removed by automatic throw-out.

DRY AND GRIND SIMULTANEOUSLY

Simply by introducing hot air, all sizes dry as they grind eliminating the need of separate drying equipment.



Sectional view of Roller Mill showing how material is ground between rolls and bull ring, then air swept to Separator which extracts fines and returns oversize for re-grinding.

WILLIAMS ALSO MAKES . . .

Heavy-duty hammermills for all quarry operations; impact and roller mills for 200 to 325 mesh grinding; drier mills; air separators; vibrating screens; steel bins; complete "packaged" crushing and grinding plants.

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
802 ST. LOUIS AVENUE ☆ ST. LOUIS 6, MO.

WC48-11PQ

WILLIAMS

CRUSHERS GRINDERS SHREDDERS

March 1951

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY

SUPREMIX CENTRAL MIX PLANT

A COMPLETE PACKAGE DEAL

"FIRST IN THE INDUSTRY"

Surprising economies and greater plant efficiency result when you purchase your plant and engineering from one experienced firm. Standardized units and plant layouts make possible a completely synchronized operation—fast, low cost erection—efficient operation—maximum controls.

Ready Mix operators are coming to SuPREMIX for assistance and equipment to convert from dry batching to Central Mixing. Unique tilting arrangement of SuPREMIX plant mixer, new layout designs and improved controls make conversion possible where headroom is limited.

SuPREMIX CONCRETE HAULERS round out the "Complete" package deal. Delivers uniform quality concrete in units of lower initial cost, less maintenance, permits hauling of bigger legal payloads and can be used for hauling sand, gravel, coal, and for other uses.

SUPREMIX INC.

HERE'S WHY THEY ASK FOR 'INCOR'

'INCOR' 24-HOUR CEMENT SPEEDS GAY WHITE WAY PAVING, TIMES SQUARE TO COLUMBUS CIRCLE

● Latest Broadway hit is the well-groomed stretch of new Main Stem paving throughout the length of the Gay White Way, from Times Square to Columbus Circle. Taking a bow for stellar performance in this new version of "Street Scene" is 'INCOR' 24-HOUR CEMENT.

Car-track removal and repaving were completed in record time, amidst the bustle and confusion of this most heavily congested area.

On a block-to-block, half-width basis, the old pavement was torn out, utilities and subgrade readied, and 'Incor' concrete placed. Dependable 24-hour service strength made it possible to run trucks over newly-placed sections, speeding work all along the line. At intersections, 'Incor'* concrete, service strong in a few hours, was ready to carry heaviest traffic.

Typical 'INCOR' performance—explaining why so many users of ready-mixed concrete ask for America's FIRST high early strength Portland cement . . . and why so many Ready Mix Operators make 'INCOR' concrete available as part of their good service.

*Reg. U. S. Pat. Off.

Supervision of
CITY OF NEW YORK—OFFICE OF PRESIDENT BOROUGH OF MANHATTAN

Contractors:
FRANK MASCALI & SONS, INC., Flushing, L. I.
TRIBORO ASPHALT CORPORATION, Flushing, L. I.

'Incor' Ready-Mix Concrete:
COLONIAL SAND & STONE CO., INC., New York

Placing 'Incor' concrete at 43rd Street—in the clutches, 'Incor' was ready for traffic in a matter of hours.

Crosstown traffic moving over newly-placed 'Incor' concrete at 46th Street intersection.

LONE STAR CEMENT CORPORATION

Offices: ALBANY • BETHLEHEM, PA. • BIRMINGHAM • BOSTON CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS • JACKSON, MISS. KANSAS CITY, MO. • NEW ORLEANS • NEW YORK • NORFOLK RICHMOND • ROANOKE • ST. LOUIS • PHILADELPHIA • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS, 125,000,000 SACKS ANNUAL CAPACITY

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

NEWS OF CONCRETE MANUFACTURERS

Pacific Concrete & Rock Organized in Honolulu—Headed by L. P. Price

Organization of a new Hawaiian corporation, the Pacific Concrete and Rock Company, Ltd., has been announced, articles of incorporation having been filed with the territorial treasurer.

Headed by L. P. Price, president and general manager, the new concern will engage in the production and distribution of transit-mixed concrete and crushed rock. The main concrete batching plant will be in Honolulu, and a second (distribution) plant will be located at the firm's rock quarry at Palalai on the main highway to Barber's Point. A fleet of new transitmixers mounted on fast trucks will be operated by the company.

Mr. Price has been closely connected with the ready-mix industry in the Hawaiian Islands since 1936. He developed and patented a reinforced concrete cesspool lining. Associated with him in the new venture are A. Paul Low, president of the Honolulu Builders, as vice-president and director; Fred L. Mandel, Jr., and Barton G. Siegfried, Jr., vice-presidents and directors; Ray E. Adelmeyer, secretary and director; David S. Nakano, assistant secretary and director; Tucker McClure, director; Roscoe W. Allen, treasurer; Ahoon Wong, assistant treasurer.

Featherlite Offers Prizes In $2,000 Student Contest

Prizes totaling $2,000 have been provided by the Featherlite Corporation, Dallas, Tex., manufacturers of Featherlite lightweight aggregates, for a 1951 student competition. The Texas Society of Architects will direct the operation of the contest.

In correspondence with the Society Featherlite's executive vice-president, A. T. Mickle, suggested the possibility of using the design of a multi-storied building of lightweight expanded shale aggregate concrete construction as a basis for the contest.

United Cement Products Co. Acquires Cowan Concern

According to Topeka, Kan., newspapers, the business management and sales of the Cowan Concrete Coating Company, Wichita, Kan., have been taken over by the United Cement Products Company of the same city. The announcement was made by M. H. and J. P. Miller, partners in United Cement.

Ralph E. Cowan, former manager of the concrete coating concern, will become technical consultant to the new firm. The Cowan company will be incorporated in United Cement as a department, policies and services to continue unchanged.

Under the new arrangement United Cement Products will have distribution rights in Kansas for "Armor Coat," "Waterlox," and other waterproofing paints for concrete or other materials.

Universal Concrete Pipe Names Barnes to New Post

J. R. Barnes

The Universal Concrete Pipe Company, Columbus, O., has appointed James R. Barnes as its research and development engineer.

Mr. Barnes, whose experience includes work in the Orient and Arctic regions, recently served as chief of surveys for Ammann & Whitney of New York, consulting engineers to the New Jersey Turnpike Authority.

Prior to that he was structural engineer at headquarters of the Royal Canadian Air Force, Ottawa, Canada, coordinating defense housing and maintenance programs. During World War II he was production engineer in charge of a large war plant at Toronto.

Wayne Albertus, who was formerly associated with the Pumice Engineering Company of Seattle, Wash., was recently named production engineer for Layrite Concrete Products at Kennewick, Wash.

Coming Events

March 19 and 20, 1951—Chicago. Annual convention, Wabash Valley Ready Mixed Concrete Association. Drake Hotel.

April 2-4, 1951 — Washington. Annual convention, Autoclave Building Products Association, Statler Hotel.

April 30-May 4, 1951—Chicago. Materials Handling Conference and National Materials Handling Exposition. International Amphitheatre.

$100,000 Block Plant Of M. G. Snyder & Sons Approved by Zone Board

M. G. Snyder & Sons, Inc., Dayton, O., have announced plans for the erection of a $100,000 concrete block plant near their sand-and-gravel pit. According to M. G. Snyder, president, the plant is scheduled to go into production in April.

Approval of the project was granted by the local zoning board of appeals. Although the firm's 77-acre tract is zoned for residential use, Mr. Snyder said that he would not consider platting the property until the gravel deposit has been removed. He declared that the use of electricity and hydraulic block-making equipment will preclude smoke and noise nuisances, and that the hills on the tract will hide the plant from the road.

Eschenbrenner Award Papers Due April 1 in 1951 Contest

Three awards in the amount of $500 each will be made by the Universal Concrete Pipe Company, Columbus, O., to senior civil engineering students in colleges and universities east of the Mississippi River for the best papers on non-monolithic concrete products. April 1, 1951, has been set as the deadline for entries.

M. T. Singleton, of Wiedman & Singleton, consulting engineers in Atlanta, Ga., will serve as judge of the Southern District in the 1951 "Eschenbrenner Awards".

Worker Suffocates in Sand At Illinois Products Plant

Edmund Wargin, 35 years of age, was the victim of a fatal accident at the Arlington Heights (Ill.) Concrete Products plant on December 12, 1950. He had been attempting to loosen frozen material in a sand hopper and either jumped or fell into it and was pulled through the bottom. Because of the noise of the machine, no outcries were heard, and fellow employees knew nothing of the accident until they saw the victim's feet coming through.

Although an inhalator squad tried to revive him, all efforts were in vain. The attending physician stated that he had suffocated.

Harry F. Jennings, president of the Jennings Concrete Supply Company, Dearborn, Mich., and former president of the Wabash Portland Cement Company, died on February 2 at Detroit. He was also a former member of the board of directors of the Portland Cement Association and of the Cement Institute. Mr. Jennings was 64 years of age.

Washington Concrete Producers Map Promotion Plans*

ON THE occasion of the annual winter meeting held in Seattle, Wash., on December 16, 1950, the member firms of the Concrete Products Association of Washington again demonstrated their progressiveness by adopting three major motions aiming directly at the advancement of the industry. Sixty-nine persons attended, representing 40 member and associate organizations; this indicated a splendid turnout of nearly two persons per firm.

The representatives voted to publish a booklet to be named *Recommendations for Concrete Masonry*. One thousand copies of this booklet will be available for distribution to architects, builders, and other products users. Verne Frese, chairman of the booklet committee, said that as a starter it will include diagrams and discussions on the basic construction and architectural details, specifications, and standard units. It is presumed that later on these loose-leaf booklets will be supplemented with additional information. The committee will continue working on the standard block nomenclature.

Attesting the association's desire to provide ample technical advice for its products users and additional help toward improving and expanding the industry, the membership named an architect to its staff. Kenneth E. Koehler, Seattle architect, assumed this position on the technical staff on January 1. Mr. Koehler replaced R. J. Cotter, who resigned at the end of October after nearly three years with the association.

R. W. Condon, chairman of the advertising committee, made a report in which he suggested an extended advertising program toward the industry's real competitors — substitute building materials. After a discussion G. P. Duecy moved to increase the advertising budget.

R. M. Gilmore, safety consultant, started off the report session with an analysis of 71 accident reports received by the association office during the previous eight months. His analysis outlined the different types of accidents, and contained helpful suggestions.

An outline of the N.C.M.A. group insurance plan was presented, and a discussion of various other group insurance plans followed. Walter Huffine, insurance broker of Seattle, who took an active part in the discussion, made pertinent comments on this type of insurance. A committee was authorized to make further studies and report at the next meeting.

Two progress reports were made on tests being carried out at Washington State College. J. J. Wegner, chemical engineer, briefly outlined the current activities on masonry dimensional change studies and stated that a printed bulletin would be available about February 1, 1951. J. A. Roberson, junior hydraulic engineer, presented his report on irrigation pipe studies. A laboratory setup will be made to study the effects of water pressures induced by air escape in pipe lines. Mr. Roberson also discussed field studies on existing pipe lines in the Yakima Valley during the late summer and fall of 1950.

After the meeting the group enjoyed a cocktail hour and dinner. Among those present were Fred Neth and Milton Johnson of the Columbia Machine Works, Vancouver, Wash., new associate member. Out-of-state members in attendance included Ken Sheppard of the Alaska Concrete Products Company, Anchorage, Alaska, and Carl Smithwick of Smithwick Concrete Products, Portland, Ore.

*Detailed information received recently on the meeting here reported has enabled us to present the full story of the event, which was also mentioned in our January issue.

Price of Permalite Upped As Production Costs Rise

Effective December 15, 1950, the price of Permalite aggregates was raised approximately 8 percent, according to an announcement made by D. H. Gott, general sales manager of the Building Products Division, Great Lakes Carbon Corporation.

During 1950, labor costs on Permalite aggregates have increased in excess of 10 percent; container costs about 25 percent. Fuel oil costs have gone up approximately 6 percent; and maintenance and repair costs have gone up in some instances as much as 50 percent. All rises in manufacturing costs, have up to now, been absorbed by the company.

Permalite is manufactured in two company-owned plants of Great Lakes Carbon Corporation at Linden, N. J., and Torrance, Calif., and also under exclusive license arrangements in major building areas of the United States.

United Concrete Pipe Plans $1,000,000 Washington Plant

Construction within the next few months of a concrete pipe manufacturing plant on the outskirts of Moses Lake, Wash., was reported assured when an option agreement covering purchase of the land was filed on December 27, 1950, in the county auditor's office at Ephrata, Wash. The land purchase culminated four months of quiet negotiations by the United Concrete Pipe Corporation of Baldwin Park, Calif. Between 50 and 60 acres of land are involved.

United Concrete Pipe, which has a number of plants on the West Coast, plans to serve Washington, northern Oregon, the panhandle of Idaho, and western Montana from the plant it will build at Moses Lake.

It was stated that the plant will reach its maximum capacity in from three to five years, and will represent an investment of around $1,000,000. A similar plant was built by the company in 1950 in Tulare, Calif. United also has plants at Oakland, Stockton, and Baldwin Park, Calif., and Salt Lake City, Utah.

Central part of the new Moses Lake plant layout, it was announced, will be a concrete platform 1,500 feet long and 50 feet wide, with rails on each side for traveling cranes. Concrete pipe will be made on this platform, which will support the pipe-making equipment, the material coming from a nearby bunker about 75 ft. high.

Surrounding the platform will be an equipment building, a shop, storage and office buildings, reinforcing cages for reinforced concrete pipe, and areas for steel fabricating and outdoor storage.

Concrete Expansion Gauge Built for Army Engineers

A highly accurate micrometer-comparator for measuring contraction or expansion of concrete specimens has been produced for the U.S. Corps of Engineers at Portland, Ore. The machine was made by Leupold & Stevens, Instruments, Inc., a Portland firm specializing in the development and construction of highly accurate instruments.

The micrometer-comparator, built under government specifications, will measure variations as small as 0.0001 in. It is used to determine length changes of mortar or concrete specimens in connection with tests on chemical reactions, heat expansion, and weathering resistance.

Features of the comparator include a cast-iron frame with a polished Invar steel gliding surface which is not affected by temperature variations. A bracket with attached dial gauge reading to 0.0001 in. slides on one end of the Invar surface, and a bracket with a screw micrometer reading to 0.0001 in. is similarly mounted at the other end. Two supports mounted between the brackets can be shifted independently to bring samples to bear on the dial gauge and micrometer gauge.

Concrete specimens to be tested are molded with metal inserts imbedded at each end. These metal inserts are lined up between the gauge and micrometer brackets of the comparator, and linear variations of concrete samples are determined with Invar steel reference bars of various lengths.

Precast Steps Licensees To Convene at Toledo, O.

Toledo, O., will be the scene—the Commodore Perry Hotel, the place—of a convention of "Homeward Steps" licensees scheduled for March 19 and 20. The announcement was made by Roger F. Williams, licensor, of Des Moines, Ia.

Mr. Williams states that approximately 90 licensees will be present, and that the main topics of discussion will be improved manufacturing techniques for precast concrete specialties and sales and promotional work for 1951. Homeward Steps are precast concrete steps which require no hand finishing.

Second Annual Meeting Of Canada's N.C.P.A. Held at Hamilton, Ont.

More than 200 members, associate members, and guests of the National Concrete Products Association (of Canada) attended the organization's second annual convention at the Royal Connaught Hotel in Hamilton, Ontario, Canada, January 29 and 30. The two-day meeting, which covered a wide range of business and technical problems of the Canadian concrete products industry, included addresses by Lloyd B. Jackson, mayor of Hamilton; R. T. Copeland, engineering director, National Concrete Masonry Association; W. P. Markert, director of promotion for N.C.M.A.; and Homer C. Martin, former president of the United Auto Workers.

N.C.P.A.'s president, A. D. Wylie of Hamilton, Ont., declared that the association formed in 1948, now includes members all across Canada and is recognized by the Dominion Government as the channel through which information is directed to and received from the industry. A report on the National Concrete Masonry Association convention in Cleveland was made by R. T. Copeland, engineering director of N.C.M.A.

The following officers were elected: A. D. Wylie, president; W. C. Coupland, first vice-president; G. Frazer, second vice-president; and R. Cooper, secretary-treasurer. Executive directors chosen included R. O. Barber, J. Pennachetti, A. Marker, W. Kirkpatrick, Carson Luke, L. G. Desbrisay, J. Edwards, C. C. Johns, J. Bruce, R. Mayotte, J. F. Boux, D. Weldon, J. A. Russell, and C. McCleery.

Other speakers included G. Fraser, N.C.P.A. board member; F. W. Paulin, Canadian Engineering and Contracting, Ltd.; G. S. Adamson, Royal Architects Association; R. W. Hurlbut, Canadian Inspection Testing Bureau; and B. F. Scull, Canadian National Research Council.

• First row (left to right): Roy Darden, Roy Darden Industries, Inc., Atlanta, Ga.; J. L. Hart, Hart Concrete Products Co., Tampa, Fla.; M. E. Rinker, Rinker Materials Corp., West Palm Beach, Fla.; F. J. Stephan, Neff Concrete Products Co., Danville, Ill.; G. W. Katterjohn, Katterjohn Concrete Products Co., Paducah, Ky.; G. M. Neff, Neff Concrete Products Co.; and H. C. Karraker, Katterjohn Concrete Products Co., Paducah.

Second row: J. T. Edwards, National Cement Products Co., Toledo, O.; E. D. Spedden, and F. D. Johnston, both of Nitterhouse Concrete Products, Chambersburg, Pa.; C. B. Fellabaum, National Cement Products Co., Toledo; T. K. Nitterhouse, Nitterhouse Concrete Products; W. D. Shea, F & A Laboratories, Inc.; and C. W. Taylor, Katterjohn Construction Co.

Third row: George Parisian, Standard Block and Supply Co., Lansing, Mich.; R. M. Fellabaum, National Cement Products Co.; O. L. Formigli, F & A System; and Doug Williams, Katterjohn Concrete Products Co., Owensboro, Ky.

F & A Licensees Take Action To Form Trade Association

On January 24 licensees of F & A floor and roof system equipment met for the first time at a breakfast at the Hotel Cleveland in Cleveland, O. After the formal opening of the meeting by Roy Darden, president of Roy Darden Industries, Inc., Atlanta, Ga., William D. Shea, F & A laboratories engineer, took over the question-and-answer period.

Mr. Shea reported that more than 1,000,000 sq. ft. of F & A floors and roofs had been placed in one area alone. He answered questions concerning load charts, stirrup spacings, and related topics. During the forum it was indicated that long-range promotional work is being carried on in engineering schools, through contacts with the Public Housing Authority, the National Concrete Masonry Association, and the Portland Cement Association.

At the suggestion of O. L. Formigli, it was decided to form an F & A trade association. Directors appointed for this body are M. E. Rinker of Rinker Materials Corporation, West Palm Beach, Fla., J. L. Hart of the Hart Concrete Products Company, Tampa, Fla., and George Katterjohn of the Katterjohn Concrete Products Company, Paducah, Ky. These three appointees scheduled their first meeting for March 15 and 16 at Palm Beach, Fla.

Archie Nicholson, former head of the Nicholson Concrete Pipe Company, Seattle, Wash., died on January 15 in Wheeler, Ore. He was 82 years of age.

• Some of the 200 persons who attended the second annual meeting of N.C.P.A. at Hamilton, Ont.

Large Supplemental Market for Concrete Units Awaits Development

THE potential in floor and roof markets for concrete block was recently brought to light again, this time by a prominent Midwestern concrete masonry producer. How the Western Brick & Supply Company of Lincoln and Hastings, Neb., built up a market for a fifth of a million soffit block floor units in less than a year is told in the following pages.

The Western Brick & Supply Company is the largest building material supply company in Nebraska. They maintain retail and wholesale warehouse stocks of materials in Lincoln, Omaha, Hastings and Nebraska City. Their two clay products plants are at Nebraska City and Hastings; sand-and-gravel plants are operated at South Bend and Hastings, with a ready-mixed concrete plant at the latter, and two modern concrete products plants are located at Lincoln and Hastings.

About a year ago, after making a survey of masonry unit floor systems in general, Western began producing soffit block for use with Acrow Telescopic Centers. For those readers not yet acquainted with modern soffit block construction, a brief description of this system of installation is in order. Acrow Telescopic Centers, furnished by the Besser Manufacturing Company, are used to eliminate conventional timber shoring by spanning from wall to wall and supporting the soffit blocks during erection. These temporary joists are adjustable in length for spans up to 16 ft. The centers, which are light enough to be carried easily by two men, are placed on the wall 21 in. o.c. by unskilled laborers. The soffit blocks are then placed on the centers, reinforcing bars and wire mesh are installed, and a 2½-in. topping of monolithic concrete is placed, forming the concrete joist and slab over these unique filler block. The soffit units are nominally 8 in. wide by 21 in. long, and they range from 4 in. to 12 in. high, depending on the desired span and floor loading. After the monolithic concrete has gained the desired strength and the floor is self-supporting, the Acrow Centers are removed, leaving the flat ceiling shown in the illustration.

• The attractive booth displayed by the Western Brick & Supply Company at the 1950 Home Builders Show in Lincoln, Neb. Note the section of full-sized soffit block roof, plus the model illustrating the use of telescopic centers with soffit block.

• A view of the Hastings, Neb., plant of the Western Brick & Supply Co. The firm adopted its new name early this year, shortly after the photograph was taken.

Western's success in this new floor market can be traced directly to the efforts put forth in promoting it. One of their first steps was to sponsor an evening dinner program at both Lincoln and Hastings for all the architects, builders, and contractors in their trade area. The program featured talks by some of Western's men and representatives of the Besser Manufacturing Co. on the soffit block system, and it included motion pictures of actual construction of soffit block floors, as well as a full-size display of a section of soffit block floor on Acrow Centers. It was noted at both of the meetings that some architects and

• A laborer placing soffit block on telescopic centers. The space provided between units forms the concrete joist when the concrete topping is placed.

• Concrete topping 2½ in. thick being placed over the soffit units and reinforcing steel. This large floor for a super market store totals approximately 13,000 sq. ft. in area. It was built in three sections.

contractors attended from towns over a hundred miles distant.

These programs were followed up by an intense campaign of direct contact with the architects and builders, and several immediate jobs were the reward. Attractive soffit block displays were also included at Western's booth at the annual Home Builders Shows in both Lincoln and Hastings, which aroused considerable interest among local home owners.

Western also executed another very effective means of promotion by subsidizing a few small jobs at the outset by guaranteeing the contractor a maximum cost per square foot of floor. This method was most effective in getting contractors "over the hump" in the use of a system which was entirely new to them. Incidentally, the cost estimate was never exceeded. Western also offers complete engineering service to contractors and architects who specify soffit block floors and roofs.

By the end of 1950, after their first season in the floor market (the first floor units were made in May, 1950), Western had furnished over 200,000 soffit units for such noteworthy structures as the Standard Casualty—Standard Reliance Insurance home office addition in Lincoln, by architect Ben Hemphill, AIA; four large super-market store buildings at Lincoln, Columbus, Grand Island, and Norfolk, all by architect N. Bruce Hazen, AIA; the First Christian Church in Fremont, by architect L. E. Wilkie, AIA; the Norfolk Auto Supply Manufacturing Company in Norfolk; the Walton Office Building and Fourth Presbyterian Church in Lincoln; and a large number of sizable residences.

The officers of the company feel, on the basis of their first year's experience with this type of construction, that generally speaking it can be applied to good advantage to almost any type of structure, with the possible exception of very heavy industrial buildings. The method has proved to be fully competitive on a cost basis with other systems.

In addition to economy, soffit block construction offers a number of important advantages as a floor system. The flat ceiling it provides is highly desirable in residential, commercial, and light industrial buildings. The coarse texture of the pumice and scoria units used in the Nebraska market results in excellent accoustical qualities at no extra cost.

• Telescopic centers in place. Spans in this building were 20 ft. from beam to wall. Considerable shoring was eliminated because of the unusually high ceilings.

• Soffit block ceiling in the basement of a large clinic and drug store in Lincoln. Note the absence of duct work and plumbing which normally defaces a basement ceiling.

The units provide much additional insulation value to the floor or roof. In many buildings the ceiling provided by painted soffit blocks is sufficient for the purpose. Where other ceiling coverings are specified, the cost of a suspended ceiling is eliminated, since plaster and other coverings can be applied directly to the soffit block surface. And, of course, the important advantage of a fire-safe floor cannot go without mentioning.

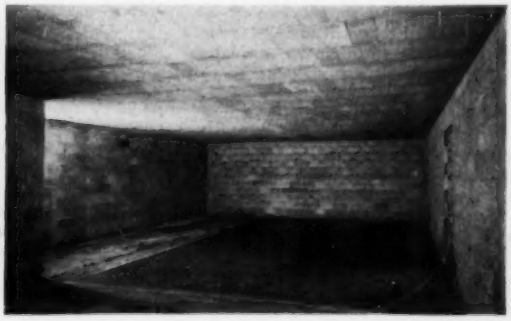
The advantage of having no shoring beneath the floor during erection is perhaps intangible, but it is most important to the contractor. There is no hindrance to the follow-up electrical, plumbing, or other work from clumsy timber shoring.

Western has found that in their particular market this type of construction has been costing the contractor as follows:

Loading per Sq. Ft.	Unit Size	Av. Cost per Sq. Ft.
40-lb. floor at grade	6-in.	$0.59
35-lb. roof	5-in.	.82
125-lb. floor at grade	8-in.	.90
125-lb. floor 2nd level	8-in.	1.09
Industrial roof	6-in.	.94

It is estimated that on residential and small buildings there is considerable savings per square foot by using the Acrow Centers instead of conventional shoring. On large

(*Continued on page* 171)



Some Interesting Results of a Survey of the Concrete Masonry Unit Industry*

By WILLIAM M. AVERY
Senior Field Editor
Pit and Quarry
Chicago, Ill.

ONE of David Harum's most frequently quoted remarks is the shrewd observation he made concerning dogs. He said he thought it was a good thing for a dog to have a certain number of fleas because it takes his mind off being a dog. What Harum undoubtedly meant was that as long as a dog has fleas, he can completely lose himself in the contemplation of such sober matters as where, how often, and how vigorously to scratch.

There is, I believe, a parallel in the problems of an industry like yours, in that the first step in solving any of them must inevitably be to decide where, how often, and how vigorously to scratch. We know, for example, that this industry still has an acceptance problem, and for some reason there appears to be far more discussion of this subject today than in former years, when the magnitude of the problem was surely considerably greater.

In our correspondence and direct contacts with block manufacturers during the past year we heard so much about the acceptance problem, particularly in regard to the attitude of banks and other lending institutions, that we resolved to pry into the matter a little. Accordingly, several months ago we sent a direct-mail questionnaire to more than 3,000 block firms all over the country, asking bluntly whether or not it is difficult to obtain loans for concrete block construction in their communities.

We asked a number of other questions, too—partly because one little question looks awfully lonesome on a big sheet of paper, and partly to help us evaluate the replies just in case we got enough to evaluate. We received a lot of answers, far more than we normally expect on a direct-mail questionnaire, and this fact alone suggests that the subject is of interest. Moreover, the replies were so distributed geographically as to suggest that we had something at least approximating a cross-section of the industry.

Apart from the specific problem at which it was aimed, the survey provided some interesting background information about the concrete block industry. For example, the plants covered reported an average investment in land, buildings and equipment of $125,000—pretty positive proof that yours is no longer either a backyard or a shoestring industry. The investment picture was fairly uniform in all sections of the country, Western plants averaging $146,000 per plant, compared with $144,000 in the East and about $112,000 in the Midwest and in the South. Similar but limited data for Canadian plants averaged about $81,500 per plant.

Average capacity per plant for the entire group was just over 700 8-in. equivalents per hour. On a geographical basis this figure ranged from a low of 615 units per hour for Southern plants to a high of 845 units per hour for Western plants. In the Midwest and East it was 710 and 715 units per hour respectively. Canadian plants showed an average of 380 units per hour.

In 1949, residential construction accounted for 49 percent of the total production of all the plants covered by the survey. Geographical comparison shows Eastern plants far in the lead, with 60 percent of total output going into residential work. Midwestern plants were next with 54 percent, and in the South and West the showing was 42 percent and 39 percent respectively.

These figures appear to directly contradict the widely held notion that acceptance of your product for residential construction has been greatest in the South and the West. I believe, however, that the picture has been thrown somewhat out of focus by the rapid industrial development which has been in progress in these two sections of the country since the war.

The companies that replied to the questionnaire reported a total output in 1949 of almost 226,000,000 8-in. equivalents, or almost 20 percent of the entire industry's production in that year. Thirty-six percent of this sizable industry sample replied flatly that there is difficulty in obtaining loans for concrete masonry construction.

When you reach that point in a survey of this kind your troubles are just beginning, for you start asking yourself questions. What does the figure mean? Is it an encouraging indication or a disturbing one? Does it indicate maximum or minimum prevalence of the situation you are trying to evaluate?

So here, for the moment at least, we enter the realm of opinion. I believe—and I could be wholly mistaken in this—that so long as any responsible producer of concrete masonry units has to sell his product against definite resistance from lending institutions, it would be the utmost folly for anyone in the industry to assume that the battle for product acceptance has been won. If it is true, as our survey indicates, that 36 out of every 100 producers are at present selling against such resistance, then it strikes me as a cast-iron certainty that the problem of acceptance is a very real one, and that it calls lustily for some prompt and vigorous scratching.

Now there is an opposed point of view. I have mentioned the 36-percent finding to a number of people in the industry. Almost invariably the reaction is: "Well, gosh, that's swell! Only 36 percent." Perhaps I'm a bit dense, but I confess that this point of view baffles me completely. Why in the name of common sense should anyone who is in the business of lending money for construction oppose or question the use of the best building material that the ingenuity of man has so far managed to devise?

That's a purely rhetorical question, since the last place on earth I might expect to hear it answered would be in this auditorium. On the face of it, the whole notion is absurd.

The maker of first mortgage loans should be among the warmest partisans this industry has. For his major concern, or perhaps we could say his only concern, when he lends money is whether or not he can get it back some day. Your product, properly built into homes, schools, churches, business structures, and industrial buildings, gives the lender the best assurance he has ever had that his investment is secure.

*Presented at the 31st annual meeting of the National Concrete Masonry Association, Cleveland, O., January 25, 1951, and published in this issue in response to requests of N.C.M.A. members.

Why, then, does he throw obstacles in your path? We asked that very question in our survey. We phrased it this way: "What reasons are stated by banks and lending agencies for refusing to grant loans on concrete block structures?"

The answers we received to this question should dispel for all time any lingering notion you may have had that bankers are inherently astute, well-informed business men. Indeed, the only fairly sound reason advanced (and this one appeared a number of times) was that the local bank had a considerable investment in the local lumber or brick yard. There's some logic to that, anyway, and it may be we'll just have to let those fellows work out their own problem.

The most frequently mentioned objection—and all the stated objections boiled down to this, one way or another—was that concrete masonry buildings have low resale value. Now how do you suppose Mr. Banker ever arrived at that amazing conclusion?

For at least the last 10 years any building with four walls and a roof, regardless of how or with what it was built, could be sold, resold, and then sold again, for anywhere from two to three times the original cost of construction. Are we to believe that the holders of first mortgages have lost money on any of these transactions?

Or, if we dismiss this notion, are we to believe that the attitude is the result of adverse experience which lenders might have had during the early years of the block industry, when the product admittedly wasn't as good as it is today? I personally doubt this very much although I would be the first to admit that there isn't a great deal of evidence in support of either side of the question.

I live in the little village of Glen Ellyn, which is located about 25 miles west of Chicago. The town has a number of rock-face residences which must range from 30 to 50 years old. They aren't beautiful, but what they lack in beauty they have more than made up for in durability. They are as sound and livable today as they were the day the first owners moved into them, and I doubt very much if any lender ever lost a nickel on one of them.

Until about two years ago one of the four grammar schools in the village was an eight-room box built in 1909 of rock face concrete masonry units. It wasn't much for looks, but it was practically indestructible. They couldn't wear it out, even though for the last 20 years it was in use no serious effort was made to maintain it. They finally had to justify putting up a new building on the grounds that the village had outgrown the old one, and even then the rock-face job had the last word. They had to locate the new school across the street because it looked like it would be too tough a job to tear down the old one.

I realize fully that this sort of casual observation doesn't constitute evidence. Perhaps it would be more to the point if we were to undertake a survey of slum areas in some of our larger cities. One of the things that has always impressed me about slums is their almost complete lack of concrete masonry buildings. For some peculiar reason competitive materials have virtually monopolized this field. You and I might argue that the reason is that concrete block construction simply doesn't deteriorate at a fast enough rate to produce slums, while the lumber and clay products interests could insist with equal logic that the fact simply proves the long, useful life of structures built with their materials.

I believe the truth of the matter is that you can build third-rate structures with any materials, since it is impossible for materials to compensate for poor design and poor workmanship. For some utterly mystifying reason poor construction with concrete masonry units has almost invariably been blamed on the product, whereas the responsibility for poor construction with other materials has been properly assigned to the designer and builder.

I haven't the dimmest notion how this weird inconsistency came about, but I think it is high time that a concerted and sustained effort was made to correct it. In short, it would seem that your industry still has a basic selling job to do among those people who have either direct or indirect influence upon the use of your product. I don't believe that you want, or that you should have, the militant support of financing agencies, but I do most certainly believe that you should do everything in your power to make them neutral.

Our survey indicates that some progress is being made. 82 percent of our informants expressed the belief that they have less trouble with financing agencies now than they had a few years ago. 12 percent reported no perceptible change in the situation, and only 6 percent indicated that the problem has grown more serious. I think that 6 percent figure, small though it is, might be regarded as a timely reminder that the only way you can be completely sure of keeping people sold on your product is to constantly resell them.

Your product has done a magnificent job of selling itself to industry and to the general public. This is evident from the fact that last year you produced and marketed close to 1,400,000,000 8-in. equivalents—by a wide margin the largest output in history. In 1949 your product accounted for about 64 percent of the total masonry wall volume constructed in the United States. Ten years ago concrete block accounted for less than 40 percent of the total, and as recently as 1937 its share was only a little over 20 percent.

Not all the sales promotion and high-pressure selling on earth could have accomplished that miracle unless the product itself had fully earned the esteem of architects, builders, and the general public. Maybe it's time some of these mortgage people were told the facts.

Large Supplemental Market

(*From page* 169)

commercial buildings, the unit saving is only about $.05 per sq. ft. However, because of the tremendous floor areas in this type of structure, the total saving is considerable. In the industrial class building there is a reasonable saving in the unit cost for spans under 16 ft., but for spans over 16 ft. the cost is about the same as with conventional timber shoring, because the timber is usually reused several times.

A spokesman for Western Brick & Supply Company states that they now feel there are unlimited possibilities ahead of them in the floor market, and that their market has wholly accepted this type of construction.

Western is ably headed by W. M. Stoner Sr., president, H. L. Sherwood, executive vice-president, Richard M. Gerber, vice-president and director of sales, A. F. Crawford, vice-president and director of the clay products division, W. M. Stoner Jr., vice-president and director of purchases, and M. R. Sherwood, vice-president and manager of operations in Hastings, Neb. A number of the executive staff are graduate engineers. Through the splendid promotional efforts of their sales organization, backed up by the uniformly high quality of their masonry units, the Western Brick & Supply Co. has developed a market for about three million 8-in. equivalent masonry units per year.

Horace Bush, newly-elected president of N.C.M.A., receives congratulations from Glenn C. Barnes, whose term as president of the association terminated with the 1951 convention.

Horace Bush elected president of N.C.M.A. at Cleveland convention

another ON THE SPOT report

WELL over 3,300 producers of concrete masonry units and manufacturers of equipment used by that industry jammed the Public Auditorium at Cleveland, O., throughout the week of January 22 to attend the 31st annual convention of the National Concrete Masonry Association. An exceptionally well-planned and timely convention program combined with a top-notch machinery show to make the occasion one of the stand-out affairs in the organization's long history of successful conventions. More than 70 manufacturers of equipment bought out every available square foot of floor space in the huge main arena of the Auditorium to display their wares, and it became necessary to locate several exhibits on the lower level of the building.

Officially identified as the 7th Concrete Industries Exposition, the machinery show was one of the most colorful, informative, and generally effective affairs of its kind in which this publication has participated. A surprisingly large number of the exhibitors showed full-sized operating models of their latest equipment, and there seemed to be far more actual operation of machines than in previous years. As a result, throughout the week the arena echoed and re-echoed with the raucous din of high-speed vibrators, as well as the relatively subdued rumble of batch mixers and other machines of the trade. Despite their occasional interference with conversation, these background sound effects, so closely identified with the industry, imparted a business-like air of reality to the occasion. Block makers came back again and again to the exhibit arena to restudy the displays and to ask questions.

New Officers Horace Bush, operating head of Multiplex Concrete Company, East Orange, N. J., was elected president of the association for the coming year. Long active in the affairs of N.C.M.A., and a member of its board of directors for several years, Mr. Bush becomes the organization's fourteenth chief executive. He succeeds Glenn C. Barnes of Barnes & Cone, Syracuse, N. Y.

The convention also unanimously elected the following men to serve five-year terms as directors: R. I. Lampus, R. I. Lampus Company, Springdale, Pa.; William R. Ireland, Birmingham Slag Company, Atlanta, Ga.; and S. Carl Smithwick, Smithwick Concrete Products, Portland, Ore. A. G. Streblow, Basalt Rock Company, Inc., Napa, Calif., Otto Buehner, Otto Buehner & Company, Salt Lake City, Utah, and Jay C. Ehle, Cleveland Builders Supply Company, Cleveland, O., were elected vice-presidents of the association. Carroll Strohm Jr., Nashville Breeko Block & Tile Company, Nashville, Tenn., was re-elected secretary-treasurer.

The important post of chairman of the association's technical problems committee went to George Mansfield of William Moors Concrete Products, Fraser, Mich. Three new members of the committee who

Past presidents of N.C.M.A. invariably remain active in the affairs of the organization. In this group, attending the reception for the newly-elected president, are (left to right) the following past presidents: Fred W. Reinhold, 1944; Roy N. McCandless, 1951; Benjamin Wilk, 1933-35; Walter J. Manhardt, 1943; Henry E. Buchholz, 1947; Glenn C. Barnes, 1950; Dean R. Lynde, 1946; and George W. Katterjohn, 1948.

31st Annual meeting and top-notch machinery show attended by over 3,000

will serve under Mr. Mansfield are Harold Price, Basalt Rock Company, Inc., Napa, Calif., F. Paul Anderson, Maule Industries, Ojus, Fla., and T. L. Goudvis, Concrete Masonry Corporation, Elyria, O.

President's Address Glenn Barnes, whose term as president of N.C.M.A. ended with the Cleveland convention, presented at the opening day's session an outline of what block producers must do to hold the tremendous market which has been developed for their product. The real competition which now faces the industry, Mr. Barnes said, is with other construction materials such as plywood, glass, aluminum and steel sheets, and clay products. He predicted that in the near future clay brick, incorporating expanded clay, shale, or other suitable lightweight aggregate, will be manufactured in much the same way as masonry units are produced today, and that the end product will be similar to concrete in every respect except color and texture.

Referring to the sizable sums of money which the structural clay products industry has set aside for basic research and product improvement, the speaker pointed out that such a program is just one phase of a broad effort to recapture some part of the market lost to concrete masonry units. For its own future promotional program, Mr. Barnes urged the block industry to strive for one large unified effort through the national association. He recommended greater activity in the utilization of visual aid programs through which architectural students can be taught the important role of concrete masonry in modern design and construction.

Dienhart's Report E. W. Dienhart, executive secretary of N.C.M.A., opened his report by reading the names of the 55 new member companies which have joined the association since January 1, 1950. The new members represent 27 states in this country, and seven of them operate plants in Canada. Twelve new associate members were also enrolled in the same period Mr. Dienhart said. The association now has over 540 active members, in addition to 110 associate and contributing members.

Mr. Dienhart outlined briefly some of the major phases of N.C.M.A. activities, showing how most of the work falls into several well-defined categories. Co-operative relationships with other organizations, technical groups, and government agencies are among the more important and rewarding activities to which members of the association's staff now devote time, the speaker said. He pointed out that through the association's membership on the Producers' Council, and that organization's close cooperative relationship with the American Institute of Architects, the block industry now takes part in discussions with some of the top architects in the country.

The block industry's wide adoption of modular co-ordination, Mr. Dienhart said, was made possible largely by its representation in the American Standards Association. This important activity resulted not only in the establishment of a unit size and a mortar joint which make sense, but enabled the industry to save thousands of dollars on raw materials. In explaining the latter statement the speaker pointed out that 1,000,000 modular units represent a savings of about 400 cu. yds. of concrete, or, at an estimated cost of $5.00 per cu. yd., a net saving of about $2,000 per 1,000,000 units produced.

As the result of the association's active representation on the nation's three top organizations of building code officials, Mr. Dienhart said, it is now possible for manufacturers of concrete masonry units to turn over to customers, code officials and others a fair, concise set of widely endorsed standards.

Copeland's Report In his report as director of engineering, R. E. Copeland referred briefly to some of the important contributions which individual producers have made, and are making, to the technological progress of the industry. In this connection he mentioned the development at a plant in Oklahoma City of a curing system which utilizes high-pressure steam, and then subjects the units to vacuum to extract moisture. The application of prestressing to structural elements composed of machine-made block, Mr. Copeland said, is another important and promising development.

According to the speaker, a block producer in Kansas City has made the first full-scale application of the milk-of-lime treatment for cinders. He also referred to the progress which has been made in the establishment of sintering as a means of producing lightweight aggregate from clay or shale. Mr. Copeland briefly reviewed the subject matter of the technical reports which the association sent to its members in 1950, and also mentioned the studies now in progress on the drying rate of concrete masonry units in stockpiles.

In discussing his branch of association activities, the speaker made reference to the consulting service which is made available to members, architects, engineers, builders, and others, and he expressed gratification over the increasing number of inquiries which come from users of block. Government agencies also request consultations from time to time. In the latter connection, Mr. Copeland mentioned a survey of concrete masonry structures built for military and defense projects during World War II.

Three new directors were elected at the Cleveland convention of N.C.M.A. They are (left to right): S. C. Smithwick, Smithwick Concrete Products, Portland, Ore.; W. R. Ireland, Birmingham Slag Co., Atlanta, Ga.; and R. I. Lampus, R. I. Lampus Co., Springdale, Pa.

Because there had been complaints regarding some of the buildings, a survey was undertaken with a view to developing recommendations to assure better performance. Although some of the complaints were found to be justified, others appeared to be beyond the control of the product or the industry which produces it. A set of recommendations is now being studied.

The association's technical activities in 1951, Mr. Copeland said, will include an effort to obtain a tentative A.S.T.M. specification on concrete floor filler units, sound transmission tests on painted concrete masonry units, exploratory tests on prestressed concrete masonry, completion of the studies of rate of drying in stockpiles, and some preliminary investigation of the effects of rate and time of mixing.

Markert's Report Reporting to the membership in his capacity of director of promotion, W. P. Markert discussed current phases of the association's long-range promotional program. Some 15,000 architects are reached, Mr. Markert said, through the four pages which the association has in Sweet's Catalogue File. In addition, he said, many requests for information are received from architects as a result of inserts which the association regularly places in the technical bulletins of the Producers' Council.

Another basic job is being done, Mr. Markert reported, in connection with the visual aid program for some 13,000 students of architecture. By means of slides supplied by the association, architectural students now have an excellent opportunity to learn about approved construction methods using concrete masonry units.

In the field of specialized selling tools, the speaker said, N.C.M.A. has published and distributed some 35,000 illustrated booklets dealing with the use of concrete masonry units in churches, schools, and residences. Basement construction and institutional buildings will be treated in booklets planned for publication later this year.

Mr. Markert also announced the publication of a new booklet entitled *There's A Big Job To Do.* This attractive 10-page booklet describes all phases of the publicity and promotional program of N.C.M.A. It also describes other major activities of the association and advances some compelling reasons why every alert producer of concrete masonry units should participate in its program through membership in the organization.

Related Associations The programs and activities of various regional, state, and local concrete masonry associations were described by their respective representatives. Speakers on this portion of the opening day's session included C. A. Sirrine, executive secretary of the Concrete Products Association of Detroit, Robert W. Baldrige, secretary of the Concrete Block Association of Allegheny County, Pittsburgh, Pa., E. L. Dooley of the Columbus Concrete Products Association, Columbus, O., Earl W. Peterson of the Nebraska Concrete Products Association, Omaha, Neb., and Merrill Allen of the Concrete Products Manufacturers' Association of South Dakota.

AGGREGATE DIVISION MEETINGS

Meetings of the various aggregate groups were held in separate rooms during the first two afternoons of the four-day convention. This arrangement avoided any conflict with the main sessions, all of which were held during the morning hours. For the most part, the aggregate meetings were quite informal, and no stenographic records were made of the proceedings. Partly for this reason, and partly because much of the discussion was far too casual to report, the following accounts are necessarily brief.

Cinders Over 500 block producers attended the cinder aggregate meeting at which Edmund H. Brooke, National Brick & Supply Company, Washington, D. C., presided. W. G. Bower, manager of H. Hessey Miller, Chester, Pa., showed excellent movies of that company's modern cinder processing plants at Harwood Mines and Pittston, Pa. The remainder of the session was spent in discussion of practical operating problems. On the discussion panel were Sam Paturzo of V. Paturzo Bro. & Son, Inc., Baltimore, Md., Harry H. Longenecker of Building Units, Inc., Primos, Pa., and George Mansfield of William Moors Concrete Products, Fraser, Mich.

Haydite The meeting for haydite producers and users was presided over by George W. Kulhavy of the Carter-Waters Corporation, Kansas City, Mo. The producers present were chiefly interested in the prospects for getting more haydite, which is still in very short supply. They were told that all manufacturers of this lightweight aggregate have a backlog of several months of orders. The fact that the capacity to produce this material is low was attributed to the sudden switch of products manufacturers and other users from heavy to lightweight aggregates, catching producers unawares. Now, it was stated, it is almost impossible to get the necessary equipment to expand capacity, and the cost is about $1,000 per cu. yd. of daily capacity. Some relief can be expected in the Kansas City area, where the Carter-Waters Corporation is adding two new kilns, and in Texas where the Featherlite Corporation is adding a fourth kiln. Mr. Kulhavy said that efforts are being made to form a national association of haydite manufacturers; it was agreed that this would be a definite forward step.

W. Chester Smith of The Cooksville Company, Ltd., Toronto, Ont., Canada, the only Canadian producer of haydite, told of some of the problems in meeting the demand there. Not only has there been no expansion of capacity, but the company is using most of the haydite it manufactures in its own concrete products, most of which are of special types bringing high prices and larger profits than could be obtained by selling

1. E. E. McDaniel, E. B. Webb, Don Gowry, R. G. Evans, and E. W. Perkins, all of the Clipper Manufacturing Co., Kansas City, Mo.

2. George Swailes, The Horvitz Co., Cleveland, O.; F. M. Cook, The Gene Olsen Corp., Adrian, Mich.; Alvin Kohn, The Horvitz Co.; M. L. Myers, Supremix, Inc., Adrian, Mich.; and M. J. Horvitz.

3. Louis Gelbman, Gelbman, Inc., Yonkers, N. Y., poses with the first Joltcrete Jr. block machine ever manufactured. This early vibration machine was displayed by Stearns Mfg. Co., Inc., Adrian, Mich.

4. One of the many welcome vistors at "The Concrete Manufacturer" booth was W. G. Bower, manager of H. Hessey Miller, Chester, Pa.

5. Harold R. Wilson, Construction Machinery Co., Waterloo, Ia., and Louis E. Gassaway, Gassaway Construction Co., Glasgow, Ky.

6. J. A. Jones, R. T. Green, and W. A. Anthony, all of the Yoder Co., Cleveland, O.

7. George L. Oswalt and Samuel H. Oswalt of The Oswalt Company, Forest Park, Ill.; and J. R. Belot and Felix Jerger, Belot Concrete Block Co., Tiltonville, O.

8. William Gilronan, Heltzel Steel Form & Iron Co., Warren, O.; R. E. Deacon, Sarasota Concrete & Block Co., Sarasota, Fla.; R. E. Heltzel, Heltzel Steel Form & Iron Co.; and J. O. Porter, Sarasota Concrete & Block Co.

9. Ralph C. Flowers and Mrs. B. N. Rosh, Concrete Machinery Co., Hickory, N. C.

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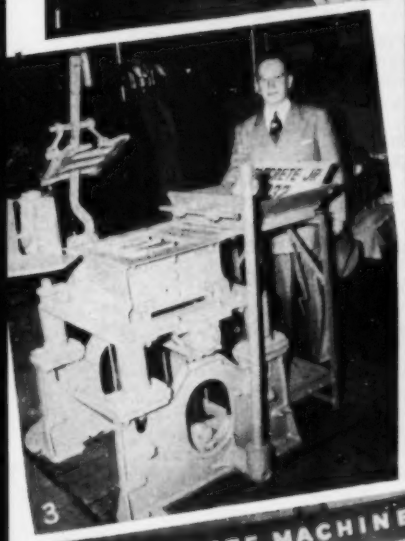

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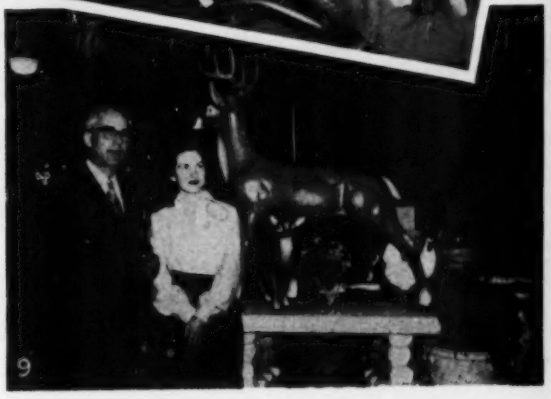

the haydite. He told those present that any good brick clay or shale will make good haydite. He also said that a 5,000-lb. haydite concrete can be made without shrinkage by mixing from 15 to 20 minutes.

Enslite Walter B. Cain of the Birmingham Slag Company, Birmingham, Ala., which produces Enslite exclusively, presided at the discussion session. About 50 block producers attended the meeting.

Several points were brought out in regard to the use of this expanded slag aggregate in producing lightweight masonry units. The harshness of the aggregate can be reduced considerably by the use of an air-entraining agent in the mix. Mixing time should be as long as possible (at least 7½ minutes), and, since the material is hydrophobic, it is highly desirable to start steaming as soon as possible after the units are molded. For a yield of 20 to 22 units per bag of portland cement, it is recommended that 8 gallons of water be used for each bag of cement.

It was said that Enslite block show a loss of only 4 per cent after 36 cycles of freezing and thawing, compared with an A.S.T.M. requirement of 5 percent loss after only 5 cycles. Mr. Cain said that the Birmingham Slag Co. produced 235,000 tons of Enslite last year, and that output for 1951 will probably reach 350,000 or 360,000 tons.

Among the guests present at the Enslite meeting was E. W. Bauman, managing director of the National Slag Association, who was asked to address the gathering. Mr. Bauman said that the slag industry produced 1,240,000 tons of expanded slag in 1949, and that last year's production of all types of slag totaled about 22,000,000 tons. All expanded slags, Mr. Bauman said, have pretty much the same properties in respect to fire resistance, heat transfer, sound absorption, weight, strength, and absorption. He said that the National Slag Association is now in the process of preparing a pamphlet which will set forth information about the performance of expanded slag. The pamphlet will be ready for distribution in two or three months, and Mr. Bauman promised that copies would be sent to those who were present at the Enslite meeting.

Pumice Gilbert E. Olson of the Builders Supply Corporation, Phoenix, Ariz., presided at the pumice aggregate meeting, which some 50 block producers attended. In his introductory remarks Mr. Olson mentioned that pumice is gaining favor rapidly, but that the material requires experience in handling. He said that pumices from various deposits may show wide variations in physical characteristics. One of the more critical factors in judging the suitability of a particular deposit, according to Mr. Olson, is the initial moisture content of the material. Best results are obtained if the initial moisture content is low.

His own company, Mr. Olson said, makes pumice units entirely. The units weigh 25 to 26 lbs. when dry. The practice in batching is to use about 5 percent (by volume) of very fine sand to give the cement slurry something to ride on. About 510 lbs. of cement is used in a 50-cu. ft. batch, resulting in a yield of 25 or 26 8-in. equivalents per sack of cement. An ideal size limit for pumice, Mr. Olson stated, is minus 5/16-in. plus No. 12.

In localities in which insulation is an important consideration, the experience of Mr. Olson's company is that satisfied customers do most of the selling of the product. In the Phoenix area there is no trouble with condensation on pumice walls, even when they are left unpainted and unplastered.

Natural Aggregates Because of the interest shown in aggregates, a special meeting was held Wednesday afternoon for those interested in natural aggregates. William Bartlett of the Cedar Rapids Block Company, Cedar Rapids, Ia., presided and led the discussion in such a way as to bring out many interesting facts. Ben Wilk, Standard Building Products Company, Detroit, Mich., created a sensation when he stated that it is possible to get 40 standard blocks meeting specifications from a sack of high - early - strength cement. The most important requirement, he said, is uniform strength as even the worst blocks must meet specifications. Well graded aggregate, careful man-

Charles Bussmann and John R. Dubie, both of Pit and Quarry; Frank W. Flowers, General Engines Co., Gloucester, N. J.; and George P. Grant, Pit and Quarry.

1. Bob Sutphen, Frank W. Flowers, and Paul West, all of General Engines Co., Gloucester, N. J.

2. C. G. Bryce and C. W. Thompson, both of the Gardner Machine Co., Beloit, Wis.

3. K. P. Kerr, D. W. Dennis, and V. J. McLean, all of the Butler Bin Co., Waukesha, Wis.

4. R. O. Hoyt and E. G. Fournier, The Knickerbocker Co., Jackson, Mich.

5. George Erickson Sr., W. R. Brodin, and A. E. Erickson, all of Erickson Power Lift Trucks, Inc., Minneapolis, Minn.

6. C. A. Lyon, F. R. Hinds, and C. H. Borcherding, all of Master Builders Co., Cleveland, O.

7. T. W. Noble, Thomas W. Noble Co., Inc., Chicago, and C. S. DeLamater and Alf Olsen of The Gene Olsen Corp., Adrian, Mich.

8. W. J. Milewski, R. D. Milewski, and F. E. Milewski, all of the Lith-I-Bar Co., Holland, Mich.

9. A. H. Martin, Pyramid Block Co., Goreville, Ill.; R. D. Boyle, Boyle Concrete Products, Henderson, Ky.; and O. H. Manchester Jr., Fleming Mfg. Co., St. Louis, Mo.

10. K. G. Becker, Cleveland Vibrator Co., Cleveland, O.; Joseph Pellecchia, Blocks, Inc., Leominster, Mass.; and J. E. Becker, also of Cleveland Vibrator Co.

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ufacture, and proper curing are necessary to achieve uniformity and high quality. He went on to describe the manner in which his company is able to make 32 air-entraining blocks averaging far over 700 lbs. at 14 days.

Mr. Wilk said that his company has its own gravel pit and uses a combination of pea gravel, coarse sand, and fine sand to achieve the desired gradation. He also described the experiments which were carried on to determine the best possible gradation from this deposit. This required 25 percent retained on the No. 4 sieve, 15 per cent on each of the No. 8, 16, 28, and 50 sieves, 10 percent on the No. 100, and 5 percent through it for a fineness modulus of 3.70. The advisable limits, he said, are 3.55 to 3.85. With this mix specifications can be met with only 2 to 2½ sacks of cement per cu. yd. of concrete, and the blocks have less than 5 percent total absorption on leaving the kiln. Mr. Wilk pointed out, however, that the mixing, manufacturing, and curing are also important. Best results were obtained in curing by steaming the kiln to the desired temperature of 165 deg. F. for sand and gravel blocks, or 175 deg. for cinder blocks, and then shutting off the steam when the blocks have reached the temperature of the air in the kiln. An interesting fact brought out in the discussion was that on a three-block machine the two outside blocks are stronger and heavier than the one in the middle.

Marketing Block Herbert J. Vincent, Cinder Block, Inc., Detroit, Mich., told of his experiences and what he has learned in *25 Years of Observations and Experiences in the Marketing of Concrete Masonry Units in the Detroit Area.* He stressed the importance of making a good product and selling it intelligently and of building up the confidence of the user in it. He outlined the seven principles necessary for success:

Know your product.

Demonstrate your faith in it by standing back of it.

Know your customer and his needs.

Know your market as it is and look for new outlets. Educate the public and particularly the architects and engineers.

Know and deal with the facts. Don't discount competitive products but don't hesitate to point out the superiority of your own.

Keep anticipating the return of a buyer's market and be ready to sell your product when this again becomes necessary. The reasonable price of concrete units in comparison with other building materials is a good selling point.

Remember that no individual can prosper alone as well as he can through co-operation with others. The list of accomplishments of the national association proves its worth and producers should co-operate with it not only financially but through loyalty and otherwise.

Visual Aids In discussing the *Visual Aid Program of the Association of Collegiate Schools of Architecture* Prof. D. K. Sargent of Syracuse University told how this movement got its start. He also used slides showing the application of visual education in the promotion of concrete products. The use of slides, he said, is an ideal means to educate professional men of the building industry on the correct use of products. By using slides provided at cost by the university, producers can get free entree to the 70 schools of architecture and the 70,000 students attending them. The slides he showed made up a complete set, beginning with elementary problems and following with details. They showed both the right and the wrong

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3. R. H. Forney, W. C. Reid, and L. L. Weitzel, all of Forney's Inc., New Castle, Pa.

4. A. H. Russell, The Burns & Russell Co., Baltimore, Md.; J. D. Ross, General Glaze Co., Baltimore; and L. J. Rosendale and J. A. Sergovic, both of The Burns & Russell Co.

5. A. E. Kelbe, Kwik-Mix Co., Port Washington, Wis.; C. R. Russell, Johnson Co., Champaign, Ill.; R. R. Kelbe, Cunningham-Ortmayer Co., Milwaukee, Wis.; and Ray Burton, Johnson Co.

6. Jack Hardcastle, Dumpcrete Division, Mazon Construction Co., Inc., Dayton, O.; Frank Moritz, Frank Moritz & Sons Co., Mansfield, O.; and W. W. Kingman of Dumpcrete.

7. R. L. Wilson, Wilson Brothers, Rives Junction, Mich., and V. W. Aubel Jr. and G. A. Peterson, both of The Allied Chemical & Dye Corp., New York, N. Y.

8. C. E. Beauchamp, Concrete Machinery Co., San Antonio, Tex., and W. H. George, Floyd B. Crossley, K. C. Robinson, and F. C. George, all of F. C. George Machine Co., Inc., Orlando, Fla.

9. Ralph Bailey, George Agar, D. D. Bryan, and Haakon Paulson, all of the Besser Mfg. Co., Alpena, Mich. Mr. Agar is also managing director of Atlas Overseas, New Zealand.

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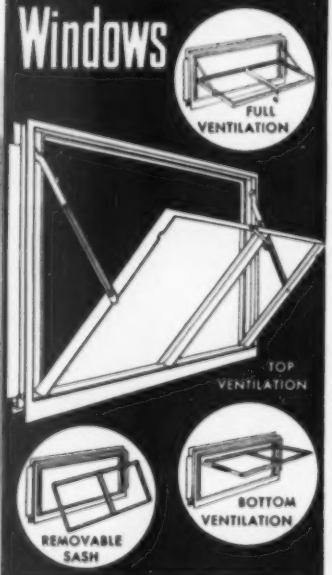

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way of using blocks. He urged that producers keep their sets of slides up to date with new developments and that they also keep local schools supplied with the latest samples of their products. The slides, said Professor Sargent, are superior to movies for this purpose as they permit discussion at any point.

Model Homes Gustaf Blomberg, sales representative of the Basalt Rock Co., Napa, Calif., in a talk, *2000 Concrete Masonry Homes Constructed in Two Years*, told how his company obtained public and FHA recognition of natural finish homes through the construction of a model home. It was believed that furring and plaster could be eliminated and concrete paint used for economical housing. A sample home was built in 1948 at a lower cost than frame and opened for public inspection. Thousands saw it and approved. The stacks of cards resulting were used to help get FHA approval on this type of construction. This started things rolling, and new model homes were built each Spring and Fall, incorporating new ideas. The home built in the Spring of 1949 used a Strestcrete roof for the first time. The one built in the Fall of 1949 used Strestcrete pre-assembled walls and roofs. A time record was set in its erection. Construction was begun at 8:00 a.m., the walls were up by noon, and the house was complete and ready for inside finish by 4:00 p.m.

Mr. Blomberg said that one builder sold 156 houses in 8 hours for a total of over $1,000,000, hundreds of people having lined up overnight in order to get one of them. Similarly hundreds lined up overnight for a 750-home project for an airfield. In closing, Mr. Blomberg left the thought that a producer can defeat his own purpose by using too much of his own material in a model house. He used slides to illustrate the very attractive offices, rest, and display rooms the company uses to display not only its own products but also the many other items of furnishings, supplies, electrical equipment, etc., which it handles.

Continuous Merchandising C. D. Franks, vice-president for promotion of the Portland Cement Association, gave his audience much good advice in a discussion on the subject: *It Is Sound Policy to Maintain a Continuous Merchandising Program Through Good Times and Bad.* He said that it is difficult to activate a sound sales program when business is booming, but it must be remembered that sales will not always be good; also that advertising promotes not only immediate sales but also good will for future sales. He recommended that block manufacturers do long-range advertising in good times and promote immediate sales when business drops off. Because of the unsettled picture for the future he recommended that manufacturers take stock and plan long-range promotion now in order to insure future business. The P.C.A., he said, can sow the seed nationally, but producers must follow up locally. He went on to describe the vast advertising and educational program the P.C.A. is carrying on through magazines, newspapers, etc., and the aid it is giving users of cement in pushing their products.

Mr. Franks invited producers to take advantage of the many ways in which the P.C.A. can help them. He said they are welcome to bring prospective customers to the Association's new laboratory in Skokie, Ill., and to its offices near the Loop in Chicago to help sell them on the use of cement and concrete. Mr. Franks said that block producers must realize that their biggest competitor is not the producer of competitive building materials, but such other attractions for the public's dollars as television, radios, automobiles, etc.

In closing, Mr. Franks repeated his advice not to wait until a slump comes before taking promotional steps. For such a long-range program he recommended the following four steps: (1) analyze your

1. Joseph Peliecchia, Blocks, Inc., Leominster, Mass., and W. S. Phillips, A. Rheberger & Son, Inc., Newark, N. J.
2. R. S. Friel, Anchor Concrete Machinery Co., Columbus, O.; L. W. Cline, Cline-Thornton, Inc., Philadelphia, Pa.; and Ward Beecher, H. S. Thompson, and L. C. Myers Jr., all of the Commercial Shearing & Stamping Co., Youngstown, O.
3. R. P. Yeager, Ludwig Neth, Lon Miller, and C. R. Gifford, all of Columbia Machine Works, Vancouver, Wash.
4. E. O. Eickstaedt, Chain Belt Co., Milwaukee; Bud Murwin and G. E. Furnival, both of Furnival Machine Co., Philadelphia, Pa.; W. A. Clayton, Chain Belt Co.; A. J. Wismer, Commercial Concrete Co., Morristown, Pa.; and R. R. Horton, Chain Belt Co.
5. C. V. Stark and H. M. Harbin, both of Transmission & Gear Co., Dearborn, Mich.
6. E. H. Brooke, National Brick & Supply Co., Washington, D. C.; D. W. Shattuck and M. W. Meyer, both of Universal Door Carrier, Inc., Indianapolis, Ind; and James Swartz, National Brick & Supply Co.
7. Morris Gross, Thermal Engineering Co., Detroit, Mich., and H. B. Kinsman, Consolidated Boiler Corp., Boston, Mass.
8. Frank Muenzer and L. J. Holzman, both of the Multiplex Machinery Corp., Elmore, O.

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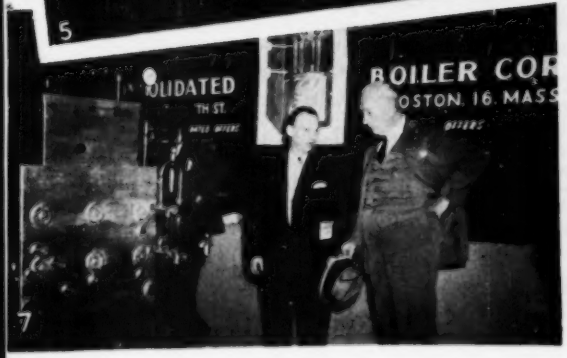
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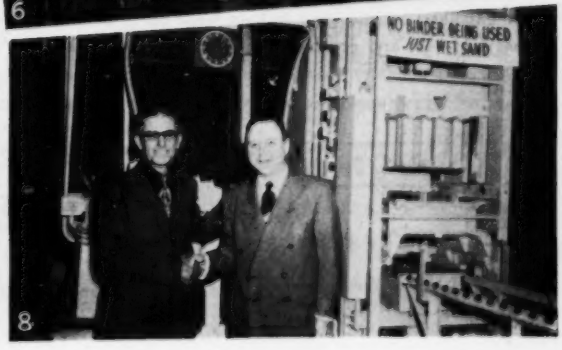
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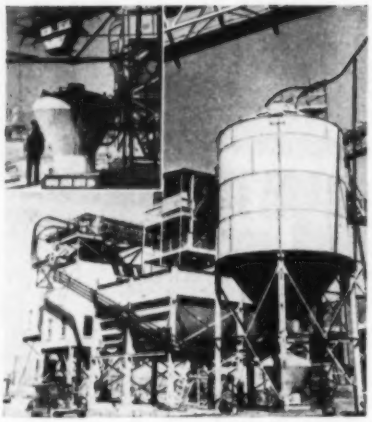
• Avoid High Bulk Handling Costs —

Use the Robinson System



YOU know of the change in conditions under which cement is now shipped. Cloth bags are out. Paper bags have to be paid for and disposed of. Bagged cement must be handled manually. All of this adds up to as much as 10c per bag which can be eliminated. Doesn't this point directly to the advantages of (1) buying cement in bulk and (2) handling this bulk cement pneumatically? This method will result in substantial savings over handling cement in bags.

Here's what the Robinson System has to offer: (a) proved lowest cost operation with moisture-free air and (b) no motor-driven parts in connection with the handling of the cement. Maintenance is negligible.

Our engineers will be glad to help work out a plan for you to receive cement in bulk and convey it the Robinson way from siding to storage to mixing plant. Many dam contractors, who sure have to watch their costs, and many concrete mixing plants are now Robinson-equipped.

ROBINSON *Air-Activated* **CONVEYOR SYSTEMS**

Division of MORSE BOULGER DESTRUCTOR CO.

Representatives in Principal Cities

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market and find your best prospective outlets; (2) follow up your leads; (3) keep your program flexible, and (4) stick to your plan even if results are not apparent immediately.

Salesmanship Appropriately closing the Tuesday morning session on marketing was a chalk talk entitled *What Makes Star Salesmen Tick,* given by W. S. Crean, Lacy Sales Institute, Newton Centre, Mass. Mr. Crean stated that with the civilian economy now behind us we must become better salesmen. In order to sell we must (1) learn all we can about our product; (2) build a story about it; (3) by thinking find out what sold them and smooth out the sales talk accordingly. Selling, he said, is like learning to swim—once you have confidence, you can never forget how. In order to sell one must first create interest in the product, then the desire to buy, and then the sale must be closed. Every sense, visual, or otherwise, that can be brought into play, helps to make the sale. Mr. Crean advised against canned sales talks; they may be all right at the start; but as a salesman gains confidence, he should interject his own words and phrases to reflect his own personality and thinking. A salesman must not only sell his product but also himself. If he is nervous, he should never show it, as it may cause the prospect to lose confidence. Mr. Crean emphasized that the three requirements for a successful salesman are knowledge of the products, willingness to do the necessary amount of work, and a personality which will click with the highest possible percentage of prospects.

Sintering Process Reed W. Hyde, president of the Sintering Machinery Corporation, Netcong, N. J., presented an interesting report on the progress which has been made in the manufacture of lightweight aggregates by the sintering process. After briefly reviewing the history of sintering, Mr. Hyde discussed in some detail the Dwight-Lloyd process which his company markets. This process was utilized in the recently-built Carolina Tuff-Lite* plant at Salisbury, N. C. Raw material, consisting of ground clay or shale, is mixed with 6 to 8 percent of fine coal or coke, then moistened and fed to a depth

*See Avery, W. M.: *North Carolina Firm Sinters Clay to Produce Lightweight Aggregate,* PIT AND QUARRY, August, 1950, page 87.

of about 12 in. onto a set of travelling grates.

The grates first pass through a 6-ft. long water-jacketed ignition hood, where the coke is ignited by means of oil-fired venturi burners. Beyond the ignition hood the grates pass over a series of wind boxes which are connected to a Dwight-Lloyd high-pressure sintering fan. Aided by the resulting downdraft, combustion of the coke in the bed of material proceeds downward at the rate of 1 to 2 in. per minute. As the fire zone works its way below the top of the material, the downward-moving air cools the burned portion, while the heat picked up by the air serves to preheat the unburned portion of the raw material. Thus the bulk of the heat is used in the sintering reaction, and the gases are wasted at relatively low temperatures. The sinter cake, which is the end product of the process, is cooled, crushed, and screened to produce finished aggregates.

Mr. Hyde believes that about 90 percent of clays and shales can be processed to produce lightweight aggregates. In the case of high bloating materials, he added, trouble usually develops because the bloating at the top of the charge shuts off air.

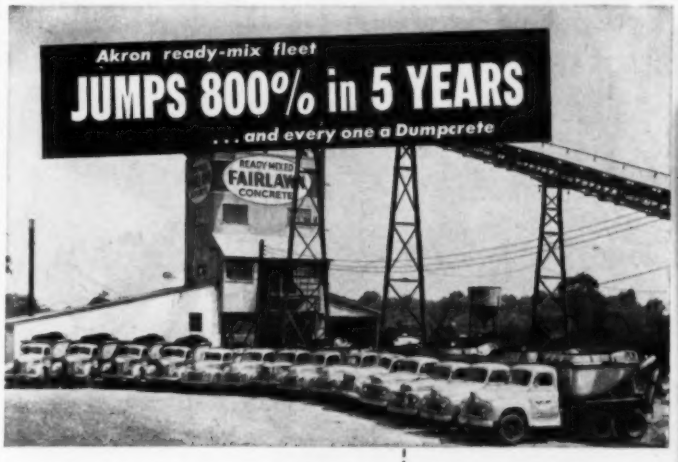
According to the speaker, the cost of sintering equipment represents 20 percent or less of the total cost of a complete sintering plant. He said that direct cost of sintering (coal, power, and labor) should be between $1.00 and $1.50 per cu. yd. for a plant with a capacity of about 200 cu. yds. per day.

After crushing, Mr. Hyde said, the weight of the end product may vary from 35 to 60 lbs. per cu. ft., but most sintered aggregates fall into the 40- to 50-lb. range. He added that the process permits only nominal control of the weight of the material.

Cement Conveying New developments in automatic cement-conveying equipment were covered in an excellent address by Col. George K. Englehart of the Fuller Company, Catasauqua, Pa. The term pneumatic conveyor, Col. Englehart said, is commonly applied to the type of conveyor in which the material moves in suspension in air, moving at high velocity induced either by vacuum or pressure, or by a combination of both. Portland cement, fly ash, and other pozzolanic materials, he said, can readily be handled with pneumatic conveyors.

The speaker described briefly the design and operation of the five primary types of pneumatic conveyors, limiting his discussion to units manufactured by the Fuller Company. He said that relative to the number of installations and the tonnages handled, the Fuller-Kinyon System is the most important conveyor in the pneumatic group. It is capable of transporting materials over relatively long distances, and may be readily operated under automatic and remote control. As Colonel Englehart described it, the system comprises a motor-driven, screw-type pump, which has the unique ability to form a continuous seal of the material itself, and a rotary air compressor. Using slides to illustrate his remarks, the speaker described several applications of the Fuller-Kinyon System for handling cement in concrete block plants.

A more recent development, the Fuller-Huron Airslide, Colonel Englehart said, is not, strictly speaking, a pneumatic conveyor, since the material, fluidized by aeration, flows by gravity down a relatively flat incline. The angle of inclination varies with the fluidity of the material, ranging from 4 deg. for free-flowing materials to as much as 8 deg. for very fine materials. An enclosed type consists of a trough-like air chamber with a porous upper surface, enclosed by an inverted trough which



Fairlawn Supply and Coal Co. of Akron went into ready-mix in 1946 with a 1 yd. used paver and 2 Dumpcretes. Now they need a 4½ yd. mixer and 17 Dumpcretes to keep up with demand. Their success is due to three factors: (1) One man mixing control means they deliver *top quality concrete;* (2) Their customers get greater workability and plasticity from *air-entrained concrete;* (3) Dumpcretes charge fast, dump fast (4 yds. in 60 seconds, if wanted) and travel fast—the lightweight trucks are speedy and easy to handle in traffic—that helps Fairlawn *deliver on schedule.*

You too can make more with less investment. Dumpcretes cost only ⅓ as much as truck mixers, and they mount on a lighter weight and lower cost truck. There's practically no maintenance, and figures show you'll cut delivery costs about a dollar a yard.

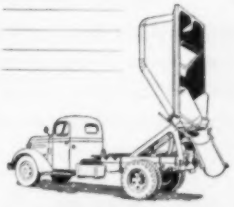
Mail the coupon today for the detailed story of Fairlawn's success. It's an eye-opener.

Please send folder "How To Operate A Ready-Mix Business Without Truck Mixers."

Name_____

Firm_____

Address_____



DUMPCRETE

DIVISION

MAXON CONSTRUCTION COMPANY, INC.

606 Talbott Building
Dayton 2, Ohio

forms the material-conveying channel. The porous surface, usually of canvas, is the equivalent of 6- to 8-ply power-transmission belting, so woven as to have a uniform, but relatively high, resistance to air flow. Open-type air slides, in which the inverted upper trough is omitted, are used for discharging bins.

According to Colonel Englehart, about 40,000 ft. of Airslides are now in use in cement plants. For a given length and capacity, their power requirement is between 1/8 and 1/10 the power required for screw conveyors, and they have the additional advantage of being readily able to pass around corners. They may be started or stopped under full load. Several installations are now operating in block plants, Colonel Englehart said.

Operating Efficiency *Determining the Efficiency of Your Plant Operation* was the subject discussed by Harvey Black, Domine Builders Supply Company, Inc., Rochester, N. Y. Mr. Black declared that the day is coming when only the most efficient plants will survive. There is no formula for plant efficiency; the only way is to study each phase of operation and production and to keep a record of all expenditures, material, labor, etc. In his plant every block machine is equipped with a Serviss recorder with a 24-hr. chart which records when and for how long the machine is shut down. The superintendent writes in each blank space the reason for the idle time. This check makes possible the elimination of most repeated delays and also keeps the machine operator on his toes; it also keeps the machine in operation for the full work period. These recorders, Mr. Black stated, are saving 15 to 20 minutes' production time per machine per day. Similar recorders are used on the company's delivery trucks. Each block machine is also equipped with a counter which records the number of pallets made, and each mixer has one to record the number of mixes. In this way it can quickly be determined how many blocks have been made and how much cement and aggregate has been used.

Types of Masonry Construction C. J. French, assistant engineer, National Concrete Masonry Association, presented a series of slides which illustrated a wide variety of types of concrete masonry construction. These showed the usual homes, business and factory buildings, etc., and more unusual types of structures such as outdoor movie theatres, swimming pools, etc. Various types of special construction were also shown, including Strestcrete columns for an industrial craneway, mortarless concrete block construction, etc.

Pensions *Present Trends in Pension Plans* was the subject of I. Austin Kelly III, consultant, New York City. He said that having a pension system is now more important than ever because workers are able to be more choosy and are taking jobs where there are plans that meet their liking. In selecting a plan, he urged employers to require 5 years' continuous service for eligibility because of the high labor turnover, with a 30- to 35-year minimum age limit and a maximum of not more than 60 years. This is necessary in order to get the full benefit from a plan, but arrangements should also be made so that older men can get benefits in proportion to the number of years worked. This, he said, will eliminate discrimination against hiring older men who will become increasingly important in the labor picture.

Mr. Kelly recommended a plan

Ask the men who operate Challenge Mixers...Mr. Harry Bender, President of Azusa Rock and Sand Co., Azusa, California, for instance, who says: "Our Challenge Mixers easily and quickly discharge lowest slump concrete. You couldn't ask for better performance." And, here's why: 1. **Two continuous type "L" shape mixer blades,** working as a team with the exclusive Challenge "dam" in the discharge cone, push the concrete out in "double quick" time. 2. **Angle of inclination** on the Challenge is only 14°. 3 **The big 34"** discharge opening is completely free of obstructions...nothing to hinder or hold back the concrete.

But don't take our word...your Challenge dealer has a demonstrator you can use in your own plant on your own job. Make your own comparison under actual operating conditions...you be the judge.

COOK BROS. EQUIPMENT CO.
Please send me a copy of your new Catalog No. 1-51 together with the name and address of my nearest Challenge dealer.
Name _____
Address _____
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EXCLUSIVE NATIONAL DISTRIBUTORS FOR
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the modern, streamlined truck mixers

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tied in with Social Security, so that the return to the employee will increase with increases in Social Security payments. Provisions should also be made to reward length of service and to make it impossible to fire an old employee just before his retirement comes due. A plan must have a cash-in value, the speaker stated, but not until after three years of employment. For a 20-year plan he recommended 15 percent after the first 3 years and an additional 5 percent for each succeeding year. In case an employee dies before he reaches 65, there should be an arrangement to pay part cash or there should be insurance protection, usually for 100 times the monthly pension, which can be obtained at comparatively low cost. A 25-year plan is best in his opinion.

A plan should require employee contribution, especially if there is a strong union, as employees do not appreciate its benefits otherwise. According to Mr. Kelly, it is best not to require top executives to contribute because of the high income tax rate. Care must be taken that a plan always returns to the employee at least what he put in it, plus interest. Where a plan covers less than 100 people, he recommends using insurance company plans. There is a vast difference in these, ranging up to 25 percent, so they should be looked over carefully. He said a plan should also be flexible so that the company can put more money into it in good years and less in lean years.

Labor *Negotiating and Administering a Labor Contract* was the subject discussed by J. A. Wilder, president of Wilder-Feldmann, Inc., Chicago. He said that in negotiating such a contract one should first itemize the labor cost and the lost time which raises the cost. He pointed out that less than 10 percent of all foremen get adequate training to fit them for their responsibilities or information on the extent of their duties and authority. If foremen were properly instructed, there would be much less labor trouble. Mr. Wilder emphasized that union agents must be treated as business men, not as racketeers, as they apparently sometimes are regarded. For best results, a labor contract must be constantly cared for or, like a machine, it will not give the results it is designed for.

Tips for Management H. A. Feldmann, secretary - treasurer of the same company, stressed the *Utilization of*

PRODUCE

1. Concrete Brick
2. Insulation Brick
3. Briquettes

on the
Brickmaster

"Only machine in its price range with capacities to 5,000 concrete bricks per hour."

For *automatic, mass production* of concrete brick . . . special insulation brick and slab . . . briquettes of various materials . . . the Brickmaster has no competition in its price range.

The Brickmaster requires only 8 h.p. for operation . . . is easily adjustable to a wide range of sizes . . . handles any aggregates which mix with cement. Mail the coupon today.

Brickmaster

Manufactured by

Posey Iron Works, Inc.,
Brick Machinery Division,
Lancaster, Pa.

Please send me free engineering bulletin describing the BRICKMASTER.

Name .....

Firm Name .....

Address .....

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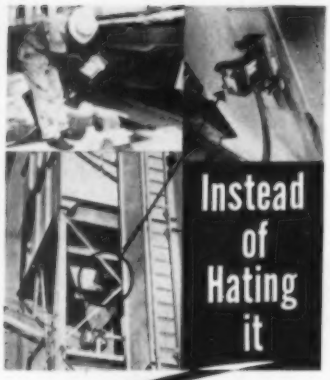
The **POSEY IRON WORKS,** *Inc.*
Brick Machinery Division
LANCASTER, PA.



Start Vibrating It!!

. . . With Cleveland Air vibrators, like the Type LSRR and F, shown at work herewith.

It's easy to just get mad and say what's the use, but it's a lot easier to let these twins shake it loose.

They are double trouble-makers for your double-tough materials. They're doing a round-the-clock job in a lot of plants like yours.

The LSRR is equipped with a cast steel male bracket which fits the female bracket that is standard equipment on most covered hopper railroad cars. Easily adapted to hoppers, bins, chutes, flasks, mine cars, etc.

The F is made in six sizes for bins containing from one to several hundred tons. The F will call a halt immediately to arching, plugging, and sticking. As shown, simply mount the vibrator on the skin of the bin, using a reinforcing plate. Type JN lever-type valve and automatic lubricator insure efficiency. Catalog No. 105 gives further detail.

THE CLEVELAND VIBRATOR COMPANY

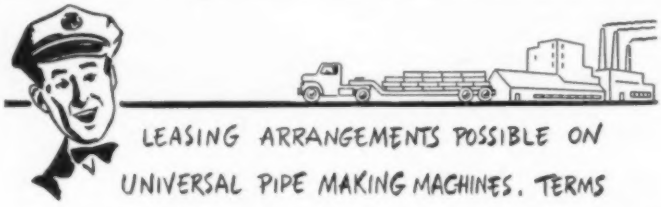
2711 Clinton Ave. · Cleveland 13, Ohio

Manpower to Attain Maximum Efficiency in Production. He pointed out that our mechanical knowledge has far outstripped our knowledge of human nature and this is the real reason for most of management's mistakes. Often, he said, what is done is not as important as how it is done. How we get along with people, said Mr. Feldmann, depends largely on how we treat them, and the unions have learned most of their dirty tricks from employers.

Prestressed Concrete Ross H. Bryan, Bryan & Dozier, Consulting Engineers, Nashville, Tenn., told of *The Use of Concrete Masonry Units in Prestressed Concrete.* He pointed out that the chief advantage of prestressed concrete masonry construction is that it is cheaper, up to 60 or 70 percent, than reinforced concrete or steel construction. In many cases it is also better; and on long spans shallower beams can be used. An added feature at present is that it saves steel. A series of slides showed how such beams are manufactured and an interesting feature was a box put around the block so that it could be quickly buttered and struck off. Lead grooves are used to keep the wire cables parabolic without chafing. Among the projects illustrated was a bridge with two 20-ft. spans and one 30-ft. span, and an athletic stadium. All blocks used in this construction, said Mr. Bryan, must test over 3,700 lbs. net area for economy in design and to prevent creep or flow which would in time lose the prestress. The wire must be high-strength which also will not creep or flow. In the jobs he described Roebling cable was used with special fittings.

Concrete Slabs A. W. Schultz, Zeidler Concrete Products Machinery Company, Clear Lake, Ia., described and illustrated with color slides precast lightweight insulating roof slab installations made by his company. Zonolite vermiculite is used, and this is bought at dealer prices because of the large amount used. In some places half Waylite is used in order to get nailability. In Mr. Schultz's opinion this type of slab is the answer for operators in limited marketing areas where the cost of the equipment for making more elaborate types of slabs cannot be justified.

Harrison S. Higbie, vice-president of the Concrete Conduit Corporation of Flushing, L. I., N. Y., died in his home in Newark, N. J., on December 28. He was 64 years of age.



LEASING ARRANGEMENTS POSSIBLE ON UNIVERSAL PIPE MAKING MACHINES. TERMS ASSURE PROFITABLE OPERATION IMMEDIATELY. FOOL PROOF UNIT OF EXCELLENT CAPACITY. REQUIRES MINIMUM MAN POWER. LOW MAINTENANCE AND LOW UNIT COST. ALL EQUIPMENT DEVELOPED BY WORLD'S LARGEST MANUFACTURER OF THIS KIND OF PIPE. WIRE, WRITE OR PHONE UNIVERSAL CONCRETE MACHINERY COMPANY, 297 S. HIGH STREET, COLUMBUS 15, OHIO, FOR DETAILS ON **UNIVERSAL LEASE PLAN.**

A.C.P. Association's News Serves Triple Purpose

Concrete Pipe News, official publication of the American Concrete Pipe Association, is now three months old—the March issue having just made its appearance in our office. The three-fold purpose of the monthly publication is "to protect and advance the interest of the concrete pipe industry; to conduct trade promotional activities, including advertising and publicity; and to apprise the public of the scope and character of the concrete pipe industry."

In the March issue the greater part of the text is devoted to an impressive discussion of concrete pipe culverts. Illustrations and tables point up the data, which covers topics such as concrete pipe railway culverts; recommended values of "N" and entrance losses; resistance to abrasion, freezing and thawing; economy of large sizes; multiple culverts; culvert design factors; and mechanics of designs of large size pipes. Also appearing in this issue is a brief description (illustrated) of a project involving reinforced concrete pipe in the construction of a siphon in Montana.

New Pipe Plant Proposed By Natl. Sewer Pipe Company

Property has been acquired in Toronto by the National Sewer Pipe Company (of Canada) and some equipment has been ordered for a new plant. The cost, estimated at $1,400,000 will be provided for out of present resources, and no additional financing will be necessary.

The new plant, to be started this spring, will embody many new manufacturing methods and the efficiency of labor and fuel will be greatly improved.

Kentucky R.M.C. Concern Purchases New Property

Purchase of a new building site by the Ready Mixed Concrete Company of Covington, Ky., was announced recently in local newspapers. The property, formerly owned by the Chesapeake and Ohio Railroad, was acquired by the firm at a reported price of $10,000.

Officials of the concern stated that the site was purchased because Covington's floodwall is to be constructed at the plant's present location.

In an announcement issued by H. G. Ballou, Pacific Coast Division Manager of Superior Concrete Accessories, Inc., the firm will build a new plant at San Leandro, Calif., at an estimated cost of $250,000.

Contract for the plant and an office building has been let, and the 12,000-sq. ft. structure is expected to be completed within three months. Increased business has caused the company to expand quarters four times since the firm established a plant in the San Francisco Bay area in 1946.

Mr. Ballou stated that the company will open an export division to handle trade in the Pacific area and on the west and north coasts of South America.

Protecting your share of a $300,000,000 business

Quality standards, guaranteed by rating plate, have built the ready mixed concrete industry. Constant advertising of this rating plate, to more than 90,000 architects, engineers and contractors, is further increasing its value to the industry—and to you.

(Advertisement below is being read by your best customers in Architectural Record, Engineering News Record and Western Construction.)

Ask for this credential when you buy concrete

3 CUBIC YARD MIXER
GUARANTEED TO HOLD MIX AND AGITATE IT'S RATED CAPACITIES AND CERTIFIED TO COMPLY WITH TRUCK MIXER MANUFACTURERS BUREAU STANDARDS AS APPROVED BY N.R.M.C.A.
4 CUBIC YARD AGITATOR
N.R.M.C.A. REGISTRY NO. 1946

The Bureau rating plate is available to all manufacturers who meet its quality standards and requirements.

However sympathetic you may be to the profit motive, you don't want *your* jobs served by truck mixers that are too small to properly mix a standard batch.

Deficiencies in drum cubics cannot be measured by the eye. *But you can instantly detect the absence of this rating plate.*

This rating plate on a truck mixer guarantees that it has the proper design and *full amount of free mixing space* needed to produce quality concrete. Look for it whenever you approve or buy concrete ready-mixed.

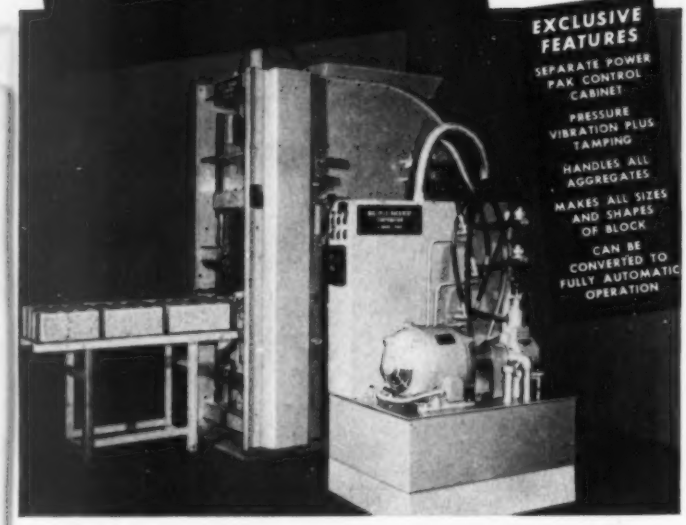
Affiliated with The National Ready Mixed Concrete Association

Truck Mixer Manufacturers Bureau

BLAW-KNOX DIVISION, Pittsburgh, Pa.
CHAIN BELT COMPANY, Milwaukee, Wis.
CONCRETE TRANSPORT MIXER CO., St. Louis, Mo.
THE JAEGER MACHINE COMPANY, Columbus, Ohio
THE T. L. SMITH COMPANY, Milwaukee, Wis.
WORTHINGTON PUMP & MACHINERY CORP., Dunellen, N. J.

AVAILABLE NOW—
THANKS FOR WAITING!

MULTICO'S NEW
LITTLE BEAVER
BLOCK MACHINE


EXCLUSIVE FEATURES
SEPARATE POWER PAK CONTROL CABINET
PRESSURE VIBRATION PLUS TAMPING
HANDLES ALL AGGREGATES
MAKES ALL SIZES AND SHAPES OF BLOCK
CAN BE CONVERTED TO FULLY AUTOMATIC OPERATION

SEMI-AUTOMATIC • HYDRAULICALLY POWERED
LOW INITIAL COST FOR SMALL PLANT OPERATORS

Another Multico first — this new sensational LITTLE BEAVER block machine can get you started in the concrete block business with minimum initial costs. Designed particularly for the small plant operator, the LITTLE BEAVER offers Blockmaster high production, quality block output, at the same lower labor costs.

It is semi-automatic — can be inexpensively converted to be fully automatic at a later date. Manual controls located conveniently on the separate power pak, first release the aggregate — vibrate on pressure — then tamp the block to size, all in one simple cycle of operation.

The LITTLE BEAVER'S advanced design represents the know-how and experience acquired through Multico's 45 years in this industry. The machine uses plain steel pallets, enabling you to produce any size or type of block desired.

Have a Multico Field Engineer assist you in planning your plant now — let him tell you first hand how you, too, can have a profitable operation right from the start with the LITTLE BEAVER.

MULTIPLEX MACHINERY CORP. ELMORE OHIO

MANUFACTURERS OF BLOCK MACHINES • MIXERS • SKIP HOISTS • STRIPPERS • ELEVATORS

NEW MACHINERY and SUPPLIES

● Light-Weight Truck Mixer

A new model "Lite-Weight Hi-Boy Trukmixer", said to be the lightest weight standard complete truck mixer available, has been announced by the Blaw-Knox Division, Blaw-Knox Company, Pittsburgh, Pa. This new Hi-Boy reportedly features a considerable reduction in weight and improved performance and provides extreme accessibility. The weight of the 3- and 4½-cu. yd. models

has been reduced without sacrificing strength.

Special features are a non-bypassing piston-type water valve that makes possible a simplified piping system; a new double-strand roller chain drive which automatically compensates for misalignment between drum and drive shaft caused by operation over rough roads; and a new compact and simplified transmission.

● Block Rack

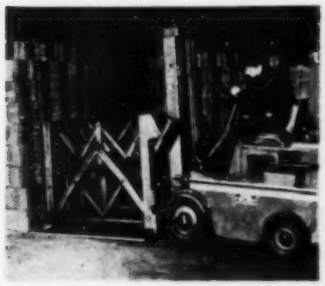
A rack designed to simplify the handling of concrete block is being produced by Equipment Manufacturing, Inc., 21550 Hoover Road, Detroit 5, Mich. The rack is claimed to eliminate individual block handling, and to make multiple handling in drying, curing, storing, and shipping practical and economical.

The rack is welded steel construction and holds 12 steel or wood pallets of the size used for casting four blocks—a total of 48 blocks. As the bottom level is raised, fork trucks can be used for transporting to kilns and storage.

● Palletless Lift Truck

The redesigned "Pul-Pac," a fork-truck device that handles unit loads without the use of conventional pallets, is now being produced by the Clark Equipment Company, Battle Creek, Mich.

Principal change from the early Pul-Pac design is the adoption of a panto-graph-type linkage to actuate the grip-



per-jaw and pusher rack, in place of the long piston rods employed on previous models. The new construction is said to allow a shorter hydraulic stroke from a more powerful piston, and to reduce the severe bending stresses to which the long pistons were subjected. The new construction also eliminates parts behind the uprights, a contribution to better visibility and safety for the driver.

The new Pul-Pac can operate in less space than former models, without restrictions on tilt of uprights. The unit has a detachable mounting, and is interchangeable with standard forks up to 54-in. usable length. It is easily disassembled for service.

● Concrete Moisture Chart

Enhancing the value of the Press-Ur-Meter, a pressure type air meter for testing air-entrained concrete, is a new chart by means of which specific gravity and moisture determinations of aggregates may be speedily made. These charts are distributed by Charles R. Watts and Company.

The procedure is simple. A sample is placed in the base of the meter, and a conventional air test is made. Reference to the chart immediately gives the moisture content or specific gravity. This method of using the chart has been carefully tested and its accuracy and reliability are assured by the manufacturer.

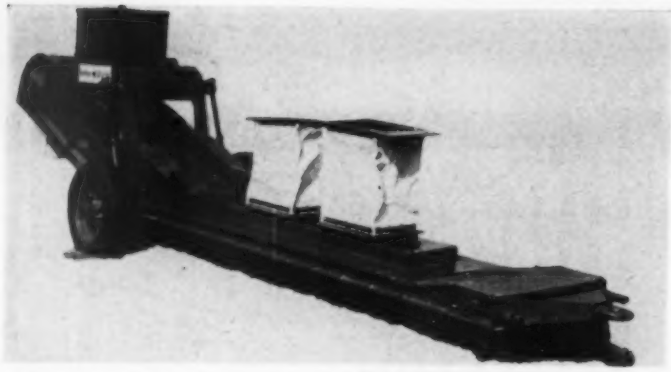
A copy of the chart is available without obligation upon writing the Charles R. Watts & Company, 4121 Sixth Avenue Northwest, Seattle 7, Wash.

● Cement-Handling Accessories

Accessories for adapting their Model 358 undercar aggregate car unloader, and their portable belt conveyors (Models 362 and 363) for handling bulk cement and other dry-batch products have been developed by the Barber-Greene Company, Aurora, Ill.

The accessories consist of easily attached metal covers for the belts and

HELTZEL STEEL FORM & IRON COMPANY
WARREN, OHIO, U. S. A.
1740 THOMAS ROAD
HELTZEL BUILDS IT BETTER
WHICHEVER WAY YOU LOOK AT IT_
Heltzel
BUILDS IT BETTER
On every point of comparison Heltzel batching plants are better built. Engineered for the operator to give maximum production at lower cost. Constructed for trouble-free service and long life. Write for complete information.



adjustable canvas loading boots and unloading spouts. The machines can be easily converted, and a considerable saving can be realized, according to the manufacturer.

● Lightweight Truck Mixer

A new lightweight 3-cu. yd. truck mixer known as the "Champion" is in production by the Concrete Equipment Manufacturing Company, 5437 Tweedy Boulevard, South Gate, Calif.

The unit, which mounts on any 2-ton truck chassis, weighs only 4,200 lbs. All non-essentials have been eliminated to reduce weight and increase payload.

The welded drum, fabricated from ¼- and 3/16-in. abrasion-resistant Corten alloy steel, is independently driven through a worm drive and roller chain, by a Ford 4-cylinder industrial engine. Hatches and rear seals have been eliminated for simplicity and ease of loading and discharge. The 68-gal. water tank is provided with positive pressure by a centrifugal pump.

A single drum control which operates from either end of the mixer makes for one-man operation. A removable hopper permits charging from overhead batchers or by belt conveyor. The discharge chute swings in a 240-degree arc.

Kemp Yorke has been appointed by the C. S. Johnson Company of Champaign, Ill., to handle sales of Johnson concrete batching and cement-handling equipment in southern California.

1¢ worth of Spray-O-Bond Plasticizer Per Bag

Gives Concrete Units Greater Cohesion Increased Plasticity, Better Texture.

We'll prove it! Send for a free sample of Spray-O-Bond Plasticizer today.

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Milwaukee 12, Wisconsin

Concrete Masonry Okayed For Chicago Housing Projects

A proposal that concrete blocks be used for exterior walls of some of Chicago's new public housing projects has been approved by the Washington headquarters of the Public Housing Administration. The local authorities decided upon concrete blocks for two-story row housing structures in an effort to meet a federal order to cut construction costs.

In view of a general rise in costs since the beginning of the Korean war, the federal authorities rejected the original plans for a 500-dwelling-unit addition to the Altgeld Garden project in Chicago, and directed that the plans be revised.

After inspecting concrete block wall construction in Skokie and Rockford, Ill., and Vincennes, Ind., the Chicago Housing Authority decided that with concrete blocks, construction costs could be held down to $10,000 or less per dwelling unit, including the cost of land. Construction is expected to start in May.

Los Angeles Okays Use of Permalite in Outer Stucco

Lightweight Permalite aggregate has received approval in Los Angeles for use in exterior stucco. Experiments under way in various laboratories of the Great Lakes Carbon Corporation now seek to determine whether Permalite (perlite) aggregate can be used successfully in exterior stucco in other areas of the United States, particularly those areas with a wide range in seasonal temperature.

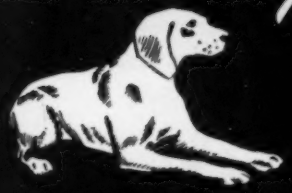
The Los Angeles approval was granted for the use of exterior plaster consisting of a scratch and brown coat of plastic portland cement and Permalite aggregate mixed in the ratio of 1 part of cement to 4 parts of Permalite by volume, and a finish coat of plastic portland cement and sand mixed in the ratio of 1 to 4½ by volume.

At Concordia, Kan., the Ross Sand and Gravel Company recently installed facilities for supplying the area with "winterized ready-mixed concrete." Steam-heated sand and stone are prepared, to be mixed with water heated to 100 deg. F., and cement is stored in 60-deg. temperature. Ellis Ross and Heber McDowell are the owners and operators of the plant.

Completion of the installation of a ready-mixed concrete batching plant was announced recently by the Union Rock and Materials Company, Phoenix, Ariz. Capacity is between 400 and 500 cu. yds. per day. Bill Hazelett, sales manager, supervised the installation.

Offices of the Concrete Products Association of Washington have been moved from the Arctic Building in Seattle to 328 Third Avenue.

Every dog has its day—



This is the day of The Continuous Mixer

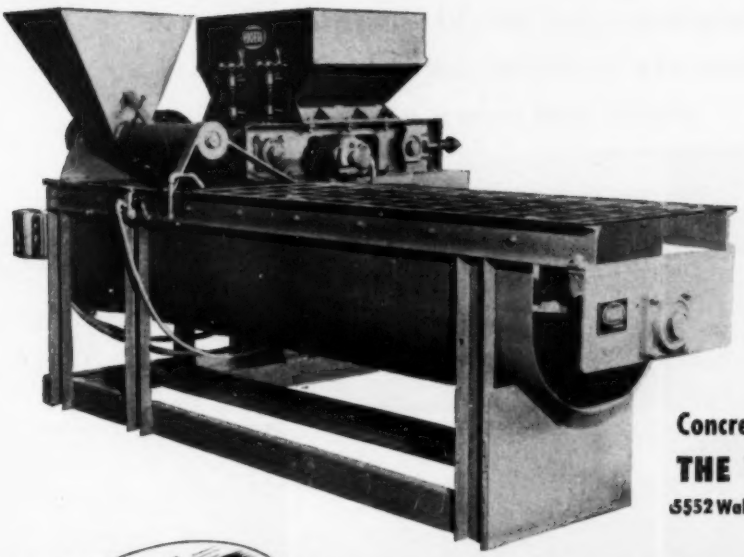
● Not any continuous mixer, of course, but the Yoder. It will make you forget everything you have been told, and everything you *think* you know about continuous mixers.

Because of several new and revolutionary features, the Yoder has brought mixing under closer control, made results surer, operation easier and simpler.

Vibrating, non-clogging, positive feed is only one of these features. It reduces aggregate, regardless of moisture contents, to constant volume—a positive improvement on feeding by weight, yet at no extra cost to you.

The thoroughness of the mixing action is another new feature, of great value in making scarce and precious cement go farther. This was proved by tests recently reported by the City of Detroit Testing Laboratory. These tests showed 50% increased strength, with the same amount of cement as used in a conventional batch mixer. This obviously makes it possible to obtain equal strength with more economical mixes.

The Yoder saves in other ways: Only half the first cost of a batch mixer of similar capacity—less than half the wear and maintenance cost. Also, by eliminating expensive weighing batchers and conveying equipment between bins and block machine.



Concrete Machinery Division

THE YODER COMPANY

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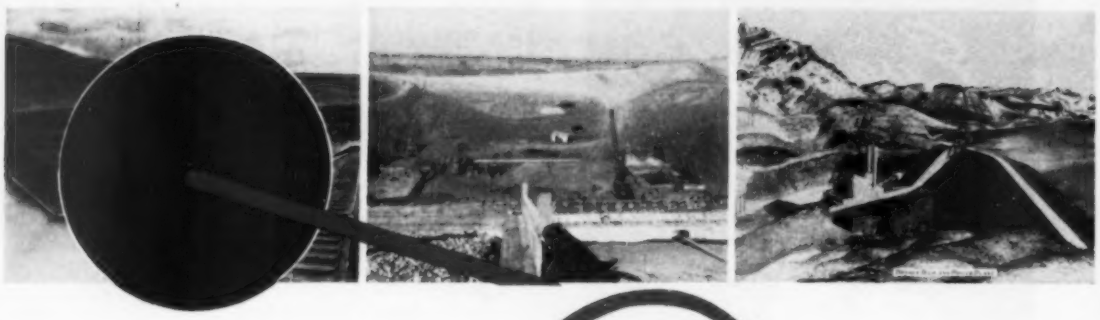
CONTINUOUS MIXER

with Vibrating Constant Volume, Non-Clogging Belt Feed



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America's leading air entraining solution

is used on more large projects (and many smaller ones) throughout the world, because Protex concrete is more durable, easier to place and more workable.

Specify... always buy... Protex Air Entraining Solution

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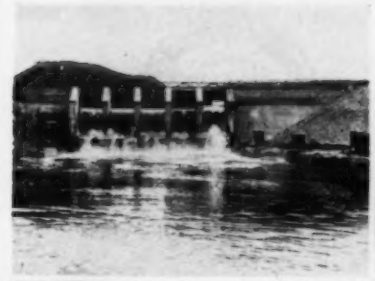

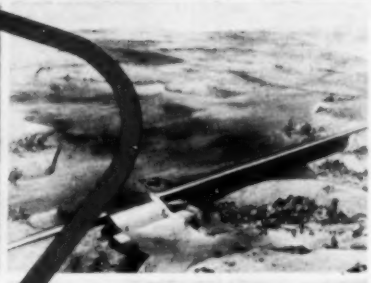

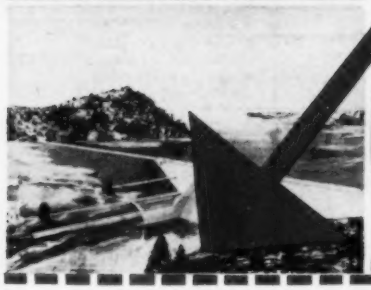

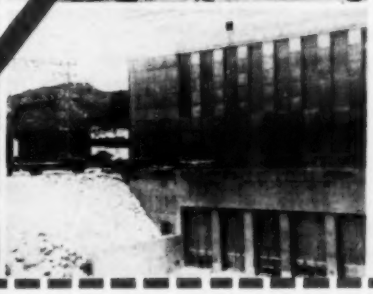

This is a partial list of Protex projects:

Morrison Knudsen Co., Inc.,
Shoshone, Wyo.
Boysen Dam, U. S. Bureau of Rec.

Johnson Winston Kiewit, Contractors,
Fort Gibson, Okla.
Fort Gibson Dam (490,000 yds.)
U. S. Corps of Engineers

Morrison Construction Co., Alma, Nebr.
Harlan County Dam (430,000 yds.)
U. S. Corps of Engineers

Al Johnson Construction Co.,
Denver, Colo.
Cherry Creek Dam
U. S. Corps of Engineers

Lytle-Ames Construction Co.,
Cambridge, Nebr.
Medicine Creek Dam
U. S. Bureau of Rec.

Hubert M. Englert, Sr. Contractor
Westley, Calif.
Delta-Mendota Canal
U. S. Bureau of Rec.

Hansen Construction Co., Tallahassee, La.
Pearl River Lock No. 1
U. S. Corps of Engineers

McNary Dam Contractors
Plymouth, Wash.
McNary Dam (760,000 yds.)
U. S. Corps of Engineers

Mottry Brothers Construction Co.,
Hulah, Okla.
Hulah Dam, U. S. Corps of Engineers

Peter Kiewit & Morrison Knudsen,
Estes Park, Colo.
Colorado Big Thompson Project
U. S. Bureau of Rec.

Lytle & Green Construction Co.
Glen Ullin, N. D.
Heart Butte Dam, U. S. Bureau of Rec.

T. L. James & Co., Rush, La.
Pearl River Lock No. 2
U. S. Corps of Engineers

Peter Kiewit & Sons Co., Fresno, Calif.
Friant-Kern Canal
U. S. Bureau of Rec.

Dawson Construction Co.
Cottage Grove, Ore.
Dorena Dam, U. S. Corps of Engineers

Guy Atkinson Co., Inc.,
Walla Walla, Wash.
Mill Creek Project
U. S. Corps of Engineers

Utah Construction Co.
Hot Springs, S. D.
Angostura Dam,
U. S. Bureau of Rec.

Morrison Knudsen Co., Inc.
Casper, Wyo.
Kortes Dam, U. S. Bureau of Rec.

Guy Atkinson & J. A. Jones Const. Co.,
Hanford, Wash.
U. S. Atomic Energy Plant
U. S. Corps of Engineers

Morrison Knudsen & M. H. Hedin,
Stasco, Calif.
Delta-Mendota Canal
U. S. Bureau of Rec.

Gordon Brasel Bennette,
Estes Park, Colo.
Estes Park Dam, U. S. Bureau of Rec.

A. L. Alley & Son, Contractor
Pickstown, S. D.
Fort Randall Dam (pouring work)
U. S. Corps of Engineers

Adler Construction Co., Hedres, Ore.
Dickinson Dam, U. S. Bureau of Rec.

Horner & Switzer Construction Co.
Hale, Colo.
Bonnie Dam, U. S. Bureau of Rec.

Young & Smith Construction Co.,
Pueblo, Colo.
Pueblo Dam, U. S. Bureau of Rec.

S. B. M. U. Co., Hot Springs, Ark.
Bailey Mountain Tunnel
U. S. Corps of Engineers

U. S. Engineers, Fort Peck Dam

McCarthy Improvement Co.
Pickstown, S. D.
Fort Randall Dam
U. S. Corps of Engineers

Al Johnson Construction Co.,
Pickstown, S. D.
Fort Randall Dam,
U. S. Corps of Engineers

Silas Mason Co., Pickstown, S. D.
Fort Randall Dam,
U. S. Corps of Engineers

S. A. Healy, Riverdale, N. D.
Garrison Dam
U. S. Corps of Engineers

Adler Construction Co.,
Dickinson, N. D.
Dickinson Dam, U. S. Bureau of Rec.

Peter Kiewit & Morrison Knudsen,
Riverdale, N. D.
Garrison Dam
U. S. Corps of Engineers

Hamilton Williams & Hanson
Beaumont, Texas
Neches River Dam,
U. S. Corps of Engineers

Consolidated Builders, Inc.,
Mill City, Ore.
Detroit Dam,
U. S. Corps of Engineers

T. L. James Co., Contractors,
Fort Worth, Texas
Fort Worth International Air Port

General Shea Morrison,
Hungry Horse, Mont.
Hungry Horse Dam (3,100,000 yds.)
U. S. Bureau of Rec.

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PLANT ACCESSORIES TO SAVE CRITICAL MANPOWER!

Bring your plant to the highest possible production at the lowest cost for labor. These BUTLER plant Accessories for the Roadbuilder, the Ready Mixed Concrete and the Concrete Products operator are designed by engineers who have had many years of close association with materials handling in concrete production.

Install them now. They'll pay you a handsome profit in these days of labor shortages.

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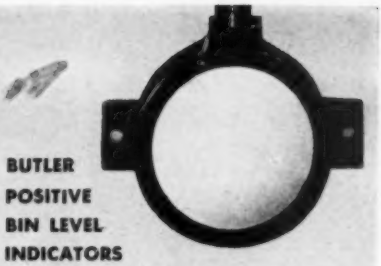
Bin gates *do* take a beating. Probably no other spot in a plant is subjected to such constant and heavy wear. Keep *extra* gates on hand in case of trouble. It will pay!

Butler offers every type of gate for every material.



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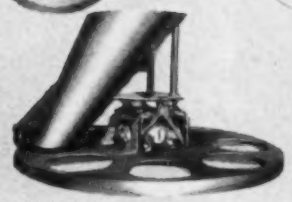
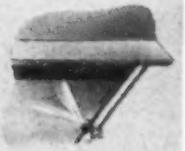
Most compact equipment made. No other offers compressor, tank, motor, moisture trap and all controls in one package. Takes no more space than a standing man. Dual pressure take-off permits use of air for other applications, too.



PUSH-BUTTON TURNHEAD

Like an automatic elevator, Turnhead stops at any station, from one to eight, at command of proper button. Great time and labor saver in changing aggregate bin compartments.



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● Manufacturers of concrete products or ready mixed concrete have the rail position in the race for the sale of paints for decorating concrete and concrete products. Because you are the man who supplies the blocks or concrete that masonry paints decorate, you have the first chance to make a sale of these profit-producing paints. Take advantage of being on the rail. Sell Medusa Paints to customers when they order materials for building concrete homes, buildings, basements, utility rooms and other constructions. Medusa Paints are made by a leading cement manufacturer with 59 years of concrete experience. Medusa Portland Cement Paint gives a beautiful, unmatched finish on concrete walls, inside or outside . . . properly applied, won't peel, chip, or flake off. Medusa Rubber Base Paint is unexcelled for concrete floors. It's a super-tough coating that stands up under heavy floor traffic. The odds are all stacked in your favor when you sell Medusa Paints.

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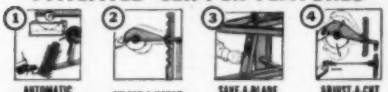

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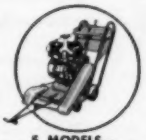

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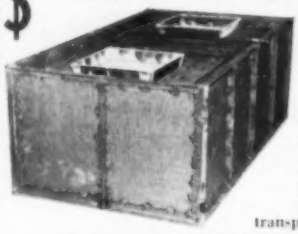

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Investigate today; demand for tile exceeds production. You can be in production within a few minutes after arrival of the MARVEL, JR.
You'll be surprised at its low cost; its low operating expense; at the superior, strong, flat-end tile it produces, and it can pay itself off in two weeks operation. Send for drain tile bulletin today and get detailed information.

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light • durable • quick cleaning

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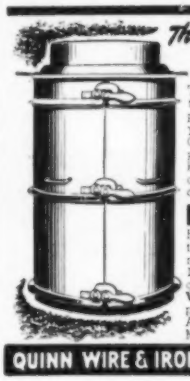

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The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost. **WRITE TODAY.** Complete information, prices, and estimates sent on request. Also manufacturers QUINN CONCRETE PIPE MACHINES.

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End Your Unloading Problems with the NATIONAL CAR SHAKER

The National Car Shaker is a low cost unit, easily handled by one man. It will unload 50 tons of sand, gravel, cinders, stone or similar materials in a matter of minutes, eliminating the bottle-neck at your car unloading point. Keeps your handling equipment operating at full capacity. National Car Shakers quickly pay for themselves in labor savings. A simple jib crane or monorail can be furnished for handling the shaker.

Send for complete information.

Write Dept. M-3

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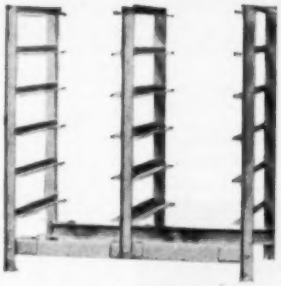
CHASE BLOCK RACKS, CARS, PALLETS

Corrosion-Resistant Hi-Strength Alloy Steel



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Sturdy construction
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Shipped knocked down
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assembled Easily

CHASE Foundry & Mfg. Co.

COLUMBUS 7, OHIO

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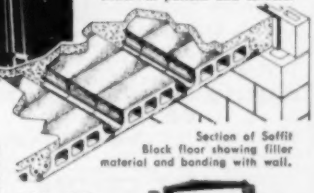
Furnish VIBRAPAC SOFFIT BLOCK for ALL FLOORS and ROOFS

Removing Centers from Finished Floor.

Permanent, Fireproof Floors and Roofs. Low initial cost and maintenance. Natural base for radiant heat installations. Provide surface of maximum acoustical and insulation value. Can be plastered, or if left exposed, makes a ceiling of beautiful pattern and texture.

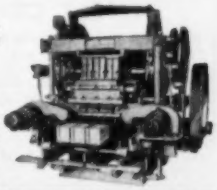


Section of Soffit Block floor showing filler material and banding with wall.

Soffit Blocks are supported in place with temporary adjustable steel centers while reinforced concrete slot is placed and cured. This eliminates timber shoring and leaves space below clear during construction.

BESSER VIBRAPAC PRODUCES SOFFIT FLOOR AND ROOF UNITS

The same machine that produces high quality concrete masonry units in all styles and sizes, using Plain Pallets. Continuous, full capacity operation. Fully automatic. No machine operator required.



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Complete Equipment for Concrete Products Plants

A 5867-¼-R

Concrete Manufacturer Classified Section

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(4-IN-1) Vibrating Block Machines

SELECT YOUR CHOICE OF (4) DIFFERENT ATTACHMENTS

USES PLAIN PALLETS
(Wood or Steel)

Beam Lintel Block Attachment
Floor Filler Block Attachment
Bull Nose Block Attachment
4 x 4 x 16 Solid Block Attachment
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Pilaster Block Attachment
Channel Block Attachment
Chimney Cap Block Attachment
Chimney Block (sq. hole) Attachment
Bond Beam Block Attachment
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Standard Brick Attachment
Modular Size Cored Block Attachment

$395.00

Complete

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EVERY MACHINE IS GUARANTEED

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FOR SALE

1—No. 7 Stearns Joltcrete.
4", 6", 8", 12" attachments.
Approximately
4550— 4" pressed steel pallets
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6500— 8" pressed steel pallets
2000—12" pressed steel pallets
200—Header castings
1—Pallet oiler.

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All shades and grades the highest quality.
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All aggregates processed ready to use.

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Block Machine For Sale

Buy the pallets and get the machine free. Now running, until larger machine arrives.

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Semi-Automatic Model HK47 Hydro-Korpak Block machine with 4-6 & 8 attachments. Dunn Shovel Mixer Model 10 complete with skip hoist and motor. Two (2) men now making 1900-8" blocks daily. Both perfect condition. Reason for selling installing larger equipment.

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1—No. 126—100 HP Erie Economic Boiler
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4—Transit truck Mixers without trucks as follows:
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All in good condition ready to work.

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Capacities from 195 to 930 bbl. for concrete-products or truck-mixer charging plants with elevators for truck or railroad-receipt-cement.

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Advertise Your "Wants" and Surplus Equipment

Complete Satisfaction

"... it has given trouble-free performance."

"... we are more than pleased and can speak only too high for your equipment."

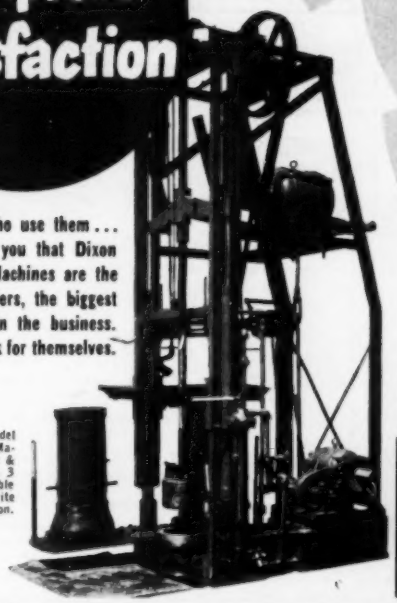
"... we can produce more tons, per man, on your machine than any competitive one we know."

"... off-bearers can not keep pipe away from the machine."

"... Men come from other plants to work on the Dixon machine."

"... no pipe failures in four years ..."

Ask the men who use them... and they'll tell you that Dixon Concrete Pipe Machines are the fastest pipe makers, the biggest money makers in the business. The records speak for themselves.



(Illustrated) Dixon Model "C" Hydraulic Pipe Machine, for 4" to 18" B & S; 6" to 18" T & G 3 and 4' Joints Adaptable to 18" grease traps. Write for complete information.

Names of these enthusiastic users of Dixon Pipe Machines will be furnished upon request.

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Plant: 6600 Washington Ave.

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Manufacturers of:

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18"x18"x¼" Steel or Aluminum Pallets

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1—Block Machine (1-at-a-time) plain pallet	195.00
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1—Set of metal step forms	195.00
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38—Flagstone Molds (cast iron)	195.00
THOUSANDS OF USED CORED PALLETS Each	.10

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Buyer for block, readymix, coal business; growing rapidly in a rapidly growing community. Good prospect despite NPA regulations. Good terms to right party.

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Rolla, Missouri Phone: 827

WANTED

1 Jolt Crete #7 machine or any good two block machine. No pallets wanted.

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HELP WANTED

Sales Engineers for established Eastern manufacturer of admixtures and concrete floor hardeners to travel in Indiana, Kentucky, New York and Northern Ohio, promoting specifications with Architects and Engineers and sales to Contractors. Should have thorough knowledge of Ready Mix Field. Salary. Submit photograph and resume of background and experience in first letter. All replies held confidential.

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FOR SALE

Several thousand B 16 cast iron pallets—50% air space
100—12" Pylaster pallets
100—double sash pallets—Code Petunia

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MINERAL COLORS

for

BRICK MORTAR
STUCCO-PLASTER-CONCRETE

"Fine Because of Their Fineness"
Ask for samples and recommendations.
BLUE RIDGE TALC CO., INC.
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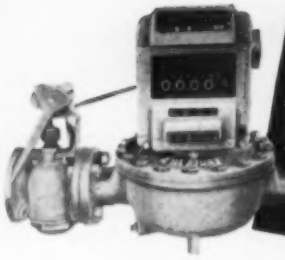
PACKER-HEAD WINGS

Both McCracken Type and Martin Trowelers—PROVED to last as long or longer — yet cost considerably less. Write for prices.

TEXAS FOUNDRIES
LUFKIN, TEXAS



NEPTUNE AUTO-STOP METERS

ACCURATE WATER CONTROL —*Automatically*

Accurate Auto-Stop meters are the quickest, most dependable way to control water in ready-mix batches. Just push buttons to set the quantity, open the valve, and the Auto-Stop does the rest. It automatically shuts off when the correct amount is delivered. Saves work, speeds loading. Large, easy-to-read numerals. Sturdy, weatherproof register has emergency stop, quick resetting, and totalizing features. Sizes for all ready-mix plants. Write for quick facts, or phone our nearest branch.

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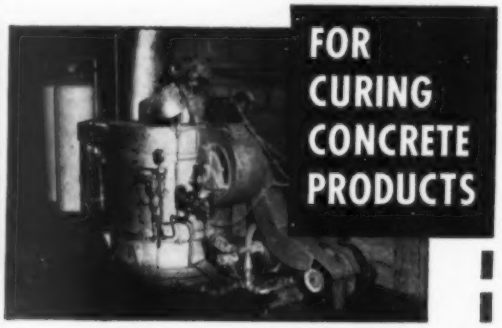
Increase BLOCK Output with a Sturdy *Erickson*

The Platform Truck "Custom-Built" for your racks—from 60 to 108 or more 8x8x16 blocks.

"THE BACKBONE OF BLOCK PRODUCTION" is what users still call the Erickson Platform Truck. Its rugged dependability to handle loaded racks from block machine to kiln assures top speed production with no delays or shut downs. The Erickson platform picks up all racks from the ends and places them close together in the kiln — no wasted space. For faster operation Erickson now offers 4 speeds forward, 4 speeds reverse.

We will build you a truck exactly suited to your racks and doorways. Also fork-type trucks. Write us—explain your needs.

Erickson **POWER LIFT TRUCKS, Inc.**
1403 Marshall St. N.E. • Minneapolis 13, Minn.



FOR CURING CONCRETE PRODUCTS

LITTLEFORD
"Kwik-Steam"
Vapor Generators

Curing of Concrete Products now can be done at the minimum of cost by using a Littleford "Kwik-Steam" Vapor Generator. These small, compact units are the fastest steam producing generators ever designed. They will produce steam in 2 minutes time from a cold start, are low cost in operation as they burn fuel oil and only produce steam when steam is needed. The "Kwik-Steam" Generators are completely automatic; no special trained operator is needed to run the Generator. Made in models to fit any size curing room. Sizes from 20 to 165 B.H.P.

CONCRETE PRODUCTS CORPORATION
LB LITTLEFORD
LITTLEFORD BROS., INC.
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THE *Columbia* MAKES PRECISION BLOCKS.

WRITE TODAY FOR COMPLETE INFORMATION!

Columbia MACHINE WORKS
105 MAIN STREET • VANCOUVER, WASHINGTON

Concrete Pipe Machinery Co.

MODEL "T" BELL-UP "McCRACKEN" MACHINE

With 40 cu. ft. mixer and skip-loader to serve machine

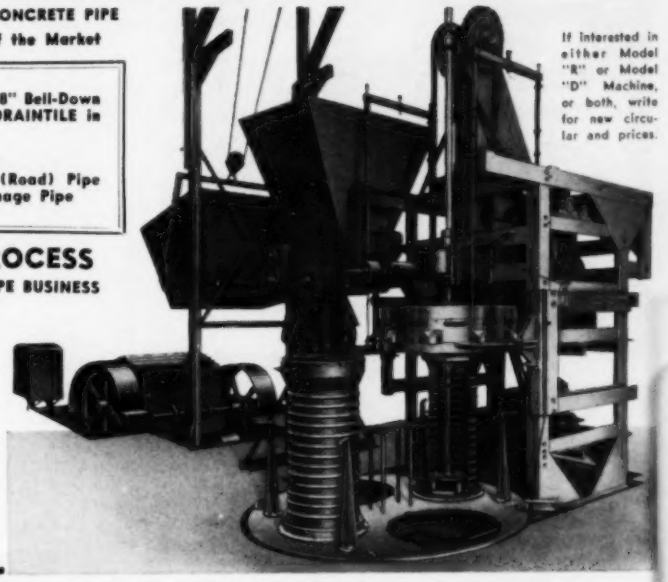
FOR MAKING PLAIN AND REINFORCED CONCRETE PIPE

Range of Sizes — 4" to 36" — 80% of the Market

ALSO MAKE MODEL "R" — Sizes 4" to 18" Bell-Down Machine. MODEL "D" Makes Butt-End DRAINTILE in 1 or 2 ft. lengths. Sizes 4" to 16.".

USES FOR CONCRETE PIPE

Storm & Sanitary Sewers • Culvert (Road) Pipe
Irrigation (T&G) Pipe • Farm Drainage Pipe



If interested in either Model "R" or Model "D" Machine, or both, write for new circular and prices.

PACKER-ROLLER-HEAD PROCESS

LEADS THE WAY TO MORE PROFITABLE PIPE BUSINESS

Eight-Hour Shifts Produce:

SEWER
Plain B & S Pipe
2400 feet — sizes 4" to 18"
1750 feet — sizes 12" to 18"
1200 feet — sizes 21" to 24"

CULVERT "ROAD"
Reinforced T & G Pipe
1600 feet — sizes 12" to 18"
1100 feet — sizes 21" to 24"
900 feet — sizes 30" to 36"

Concrete Pipe Machinery Co.
Cable Address: Macpipe

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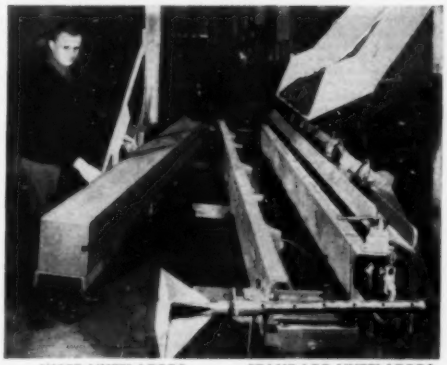
Steel Short? — SELL CONCRETE LINTELS!



SUPER LINTELATORS

Make lintels 7⅝" HIGH by 3⅝" 5⅛" 7⅝" 9⅝" 11⅝" WIDE in these lengths.

S 6	2'8" up to 6'
S 7	2'8" up to 7'4"
S 8	2'8" up to 8'8"
S 9	2'8" up to 9'4"
S10	2'8" up to 10'8"

STANDARD LINTELATORS

Make lintels 7⅝" HIGH by 3⅝" 5⅛" 7⅝" WIDE in these lengths.

No. 6	2'8" up to 6'
No. 7	2'8" up to 7'4"
No. 8	2'8" up to 8'8"
No. 9	2'8" up to 9'4"
No. 10	2'8" up to 10'8"

Expand Your Markets Profitably with the

KENT Lintelator

Concrete lintels are being more and more widely accepted by builders who formerly would use only steel lintels. That's natural for there are many arguments in favor of the concrete type as made on the KENT LINTELATOR.

Now, with steel becoming more and more difficult to obtain, manufacturers will be able: to sell tough buyers who wouldn't listen to them before — to greatly expand their sales of this stable item and considerably increase their total profits.

What are you doing about the LINTELATOR and the lintel market? If you haven't looked into the matter isn't it wisdom to do so without further delay? Write at once for the new bulletin.

The **KENT MACHINE CO.**
CUYAHOGA FALLS, OHIO

CONCRETE PRODUCTS MACHINERY SINCE 1925

Save 8 man-hours every day

...with truck-man!"

And that's not hay! That's what block plant operators across the country tell us they save with this economical, rugged truck. One man's time . . . every day . . . the whole year 'round . . . *that* adds up!

You save up to $300.00 and more during the first month you put Truck-Man to work in your block or brick yard . . . and you continue to save at that rate during years of faithful, dependable Truck-Man service.

Truck-Man is a light, speedy, highly maneuverable truck that works a shift on little more than a gallon of gas . . . requires minimum maintenance . . . has simple controls any worker quickly learns to operate. The special 62" platform handles even 72 block racks . . . those extra big loads that mean more profit per trip between block machine and curing room. Various platform heights, widths and lengths available to suit your operation.

There's an extra dividend for you, too, in the gentle treatment your blocks get. Truck-Man's easy hydraulic lift and drop, soft *start* and *stop*, and rubber-cushioned ride spot your racks gently . . . no costly checking of green blocks to eat up profits.

New 1950 catalog describes three low-cost Truck-Man models. You owe it to yourself to get the whole story on this money-maker. Coupon brings your copy, at no obligation. Mail it now. Sales and service in 95 centers across the nation!

truck-man

Div. of The KNICKERBOCKER CO.
371 LIBERTY ST. • JACKSON, MICH.

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CITY _____ ZONE _____ STATE _____

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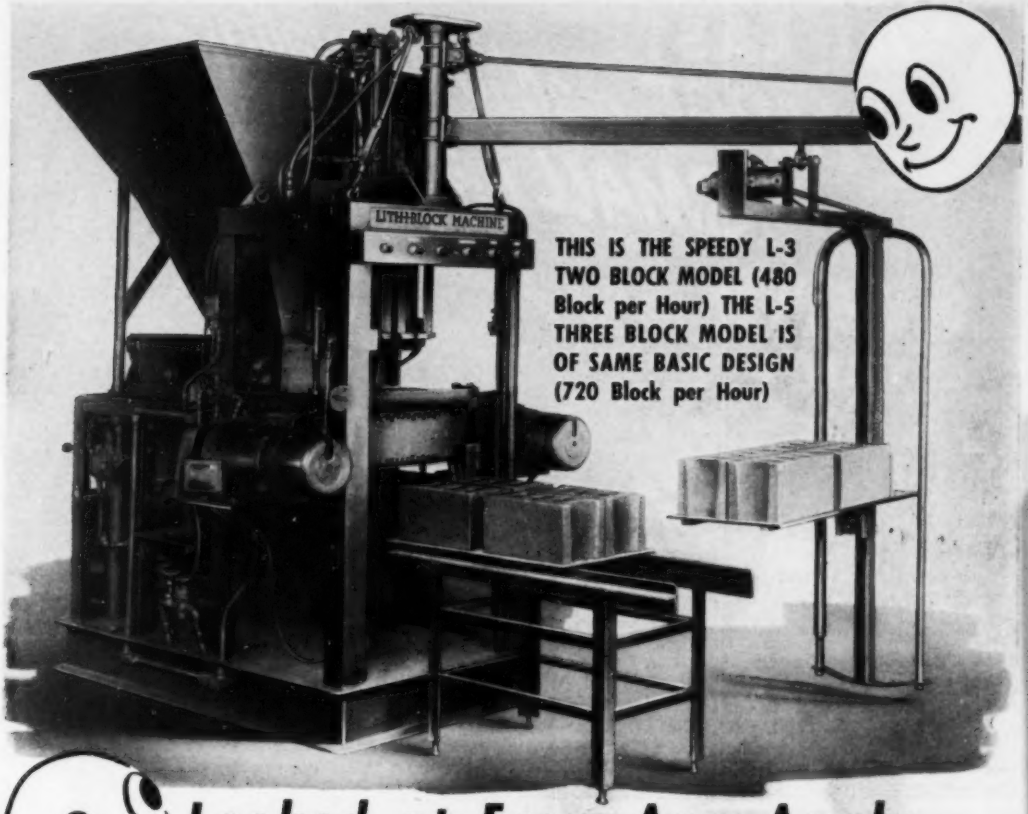


THIS IS THE SPEEDY L-3 TWO BLOCK MODEL (480 Block per Hour) THE L-5 THREE BLOCK MODEL IS OF SAME BASIC DESIGN (720 Block per Hour)

Looked at From Any Angle, It's The Machine That's Engineered To FIT THE AGE!

If your business can stand some streamlining — greater production efficiency — greater handling economy — greater time-saving in cubing and mold box changeovers — then the key to your whole program is found in the smoothly efficient straightline LITH-I-BLOCK Machine. Ask any LITH-I-BLOCK producer.

If you want to cut yourself a bigger slice of the concrete products market in your territory, then you have all the more reason for hitching your wagon to the LITH-I-BLOCK star — for it's a star that is rising higher and higher, brighter and brighter. Architects, builders, contractors and masons — all down the line — go for the clean-cut, uniform, perfectly finished masonry units turned out so accurately by the LITH-I-BLOCK machine.

Get set for the Age in which you are doing business — get the machine that Fits the Age — get going with LITH-I-BLOCK!

LITH-I-BLOCK

ADDRESS YOUR INQUIRY TO

LITH-BAR COMPANY

Dept. CM-3 HOLLAND, MICHIGAN

AT LAST!
LARGE machine quality— SMALL machine cost!

STEARNS ZIPPER

A world-beater for the small concrete block plant

PRODUCES BEAUTIFUL, COMPACT, VIBRATED, PRESSED-TOP BLOCK of Stearns 15, 50 and Joltcrete quality *at a nominal cost!*

NO FURTHER INVESTMENT!—The Zipper can be easily installed in any tamper-type plant with no further investment.

SEMI-AUTOMATIC—POWER-OPERATED—PUSH-BUTTON CONTROLLED—Or, if you wish, MANUALLY-CONTROLLED at even less cost!

ONE 8″, 10″ or 12″ BLOCK PER CYCLE.

WORKS LIKE A TOP!—Smooth-operating. Handles like a Joltcrete. No waste motion. Finest equipment. Cored Pallets. Relineable type mold box.

GUTS AND STAMINA!—The Stearns Zipper can really take it! The most rugged, trouble-free, small (6′x4′x6′) concrete block machine ever placed on the market!

SIMPLIFIED CONSTRUCTION—Extra compact. Every part easily accessible.

REQUIRES ONLY ONE MAN TO OPERATE—Thinking about starting a small plant? Dissatisfied with your quality of block or production rate? Call, wire or write *today!*

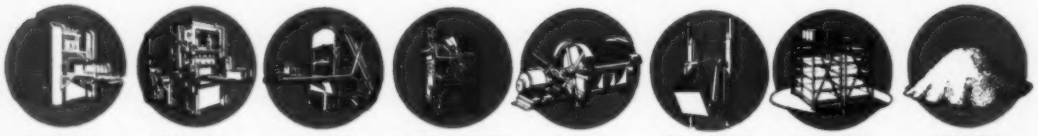
Pat. and Pat. Pend.

SEMI-AUTOMATIC, POWER-OPERATED STEARNS ZIPPER

PERFORMANCE IS PERFECTION . . . PERFECTION IS PROFIT!

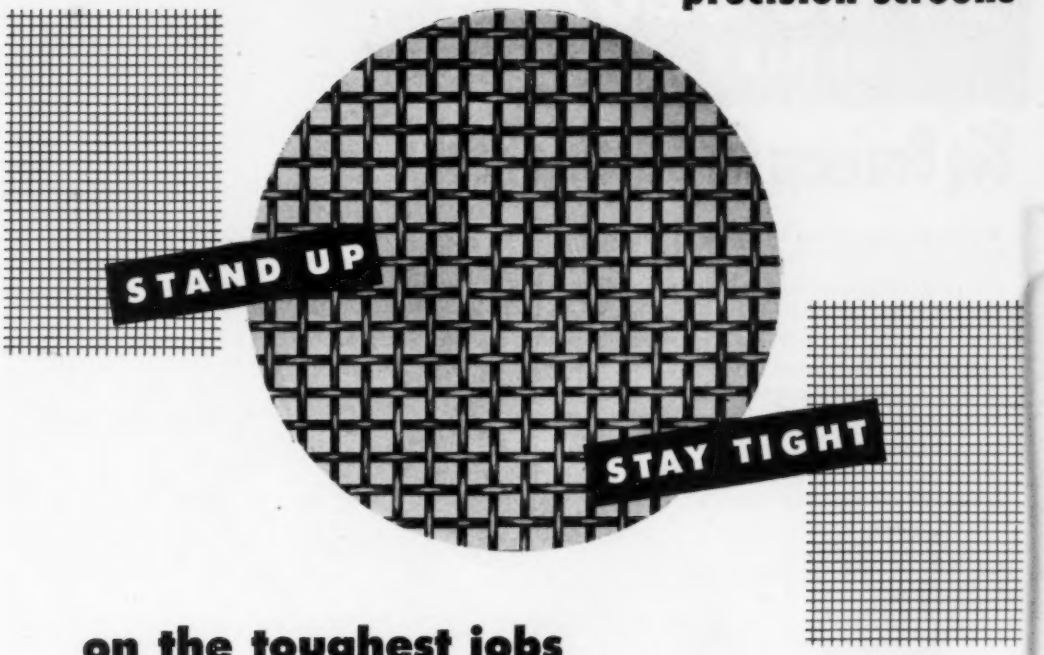
MODERNIZE WITH A STEARNS! BACKED BY MORE THAN A QUARTER-CENTURY OF KNOW-HOW!

STEARNS
MANUFACTURING COMPANY • INC
ADRIAN • MICHIGAN



STEARNS 15 | STEARNS 50 | JOLTCRETES | CLIPPER STRIPPERS | MIXERS | SKIP LOADERS | TURNTABLES | SINTERLITE

WISSCO CALWICO
Super-Tempered
precision screens



on the toughest jobs

SUPER-TEMPERED precision screens help to lower your operating costs... add to your profit margin because they wear longer; stay tight and accurate longer.

Here are two good reasons why: First, because they're made of tough, super-tempered steel, they stand up better to abrasion and fatigue. Second, because they're woven on specially designed, extra-powerful hydraulic looms, they will not loosen up or shake apart even under the most punishing vibration.

To meet your specific job demands, SUPER-TEMPERED precision screens are available in any length and width required for vibrating screen or trommel; furnished with welded, hooked or reinforced edge to fit any type of vibrator. To order, phone our nearest office.

SUPER-TEMPERED PRECISION SCREENS CF&I

A PRODUCT OF WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

Sales Office & Plant—56 Sterling Street, Clinton, Mass. • Branch Offices in key cities everywhere

LORAIN

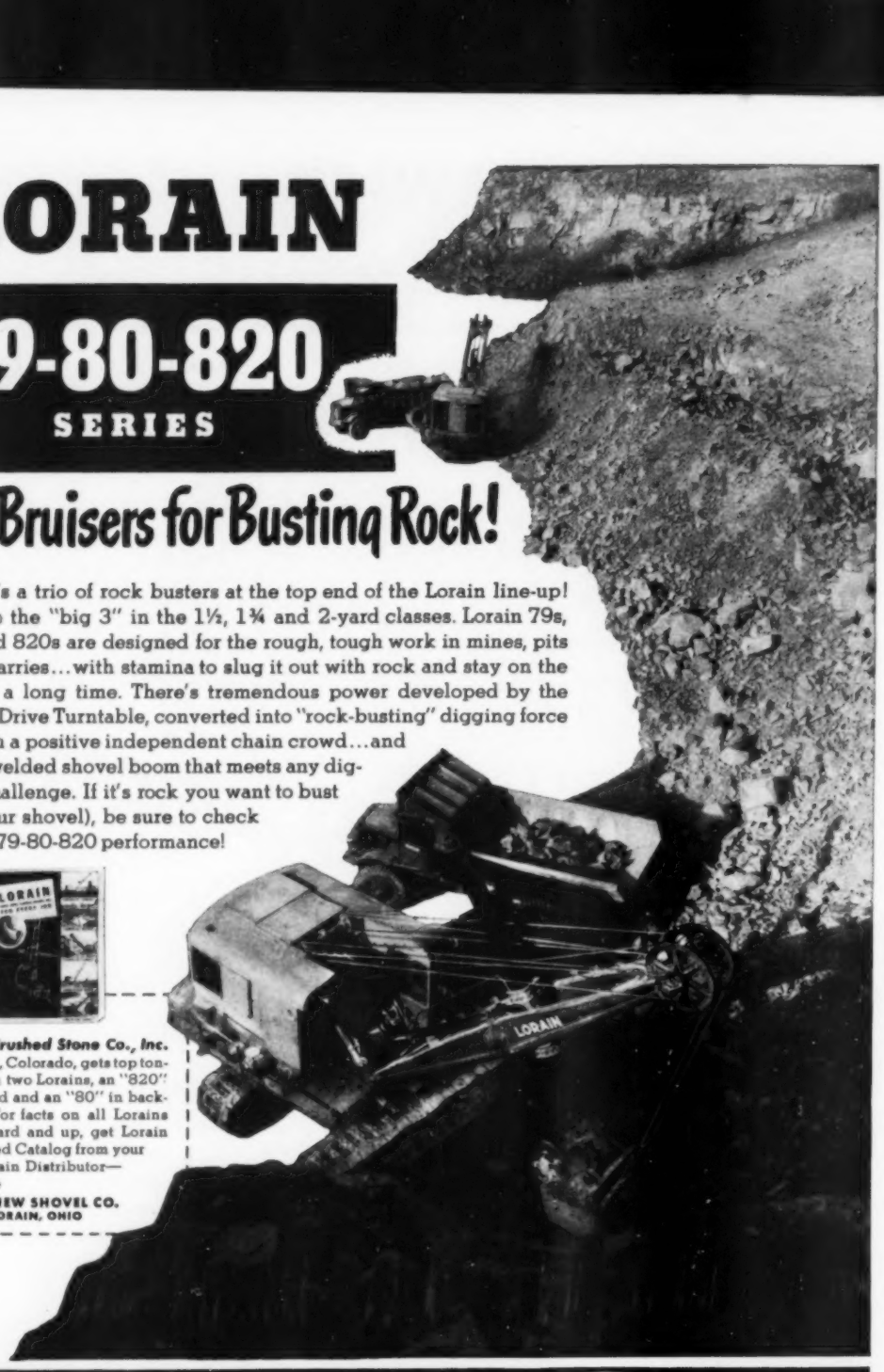
79-80-820 SERIES

Big Bruisers for Busting Rock!

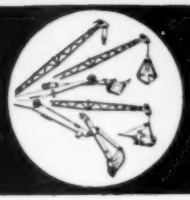
■ Here's a trio of rock busters at the top end of the Lorain line-up! They're the "big 3" in the 1½, 1¾ and 2-yard classes. Lorain 79s, 80s and 820s are designed for the rough, tough work in mines, pits and quarries...with stamina to slug it out with rock and stay on the job for a long time. There's tremendous power developed by the Center Drive Turntable, converted into "rock-busting" digging force through a positive independent chain crowd...and an all-welded shovel boom that meets any digging challenge. If it's rock you want to bust (not your shovel), be sure to check Lorain 79-80-820 performance!

Denver Crushed Stone Co., Inc. of Golden, Colorado, gets top tonnage from two Lorains, an "820" foreground and an "80" in background. For facts on all Lorains from ½-yard and up, get Lorain Condensed Catalog from your Thew-Lorain Distributor—or write to

THE THEW SHOVEL CO.
LORAIN, OHIO

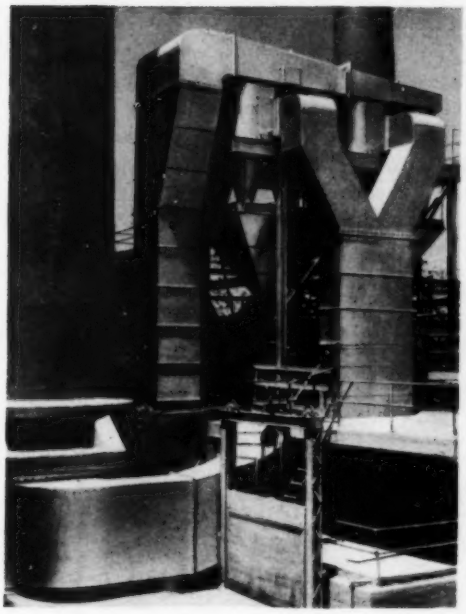


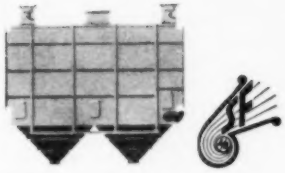
THEW LORAIN®
on CRAWLER or RUBBER



SHOVELS
CRANES
DRAGLINES
CLAMSHELLS
HOES

You can save every dollar's worth of Kiln Dust





BUELL 'SF' Electric Precipitator

Kiln Dust Recovery may call for a Precipitator System, or one that combines both Cyclone and Precipitator. The Buell 'SF' reflects Buell's "Engineered Efficiency" in the collection and recovery of fine dusts, fumes and vapors.

Buell recovers more dust!

Returned dust needs no Pre-Processing!

BUELL RECOVERS MORE DUST—LESS ALKALIS!

High cyclone efficiency — assured by Buell's exclusive van Tongeren "Shave-Off"—boosts kiln dust recovery by tons. Harmless alkali passes through the collector. More "pure" dust is returned. No additional operation for alkali removal. The time and money Buell saves is quickly calculable!

BUELL CYCLONES CAN'T CLOG!

The secret is in the cyclone diameters. They are large! Can't clog! Not even at the outlets. The result? All cyclones in a Buell System operate with uniformly high efficiency—without interruption!

BUELL SYSTEMS SHOW NO WEAR!

Even after 12 years, Buell Systems recovering dust from pulverizers, kilns and driers, still operate with practically no maintenance. Responsible for this record are large-diameter cyclones, made possible by Buell design, that cut the abrasive effect of rock dust to the minimum. Down to zero go shutdown and repairs!

Our engineers will gladly consult with you on your dust recovery problems. Write today to: Buell Engineering Company, 70 Pine Street, Suite 5055, New York 5, N. Y. No obligation, of course.

buell

Engineered Efficiency in **Dust Recovery**

Allis-Chalmers Service Does Not Stop When Your Equipment is Installed

YOU SEE, Allis-Chalmers maintains a staff of special repair parts service experts, whose job is to see to it that emergency repair orders are given emergency treatment.

On the alert day and night (they can be reached at home), these men get on the job at once when an emergency call comes through. Working closely with shop management, they locate parts or materials, make sure that shop machinery and machine operators get on the job right away. Most important — *they stay on the job* until the needed part is on its way and actually delivered to you!

Fast, dependable repair parts service is an important reason why many men in industry keep on specifying Allis-Chalmers equipment year after year. As one A-C customer put it, "We know that when Allis-Chalmers repair parts men go to work for us we'll get our parts very soon."

A-3284

New Crusher Shaft Delivered Two Days After Old One Breaks!

FRIDAY P. M.
A gyratory crusher goes down with a broken mainshaft in Watertown, N.Y. plant of General Crushed Stone Company, stopping production.

SATURDAY A. M.
Supt. Bovee, of General Crushed Stone, calls Allis-Chalmers Maintenance and Repair Section, explains predicament. An Allis-Chalmers repair parts expert arranges to follow through at once.

SATURDAY P. M.
New mainshaft and necessary auxiliary parts are rounded up in West Allis-Works (where they are held in readiness for just such an emergency) and leave A-C yards at 6:25 p.m. Saturday. Meanwhile, Allis-Chalmers Traffic department is able to speed shipment by making a route change at Chicago, saving 48 hours. Repair parts man calls Supt. Bovee, tells him shipment will arrive Syracuse, N.Y. 6:30 p.m. Sunday, and supplies car number.

SUNDAY P. M.
Truck is waiting at Syracuse to take shipment direct to Watertown, N.Y.

MONDAY
Crew works Sunday night and Monday completing installation of new mainshaft and parts. Plant is back in operation first thing Tuesday morning. (Monday was a holiday, so hardly any time was lost at all.)

SERVICE LIKE THIS *is not exceptional when emergencies exist. It's typical of the repair parts service you can expect after your Allis-Chalmers machinery has been installed. Allis-Chalmers, Milwaukee 1, Wisconsin.*

Allis-Chalmers will be glad to recommend spare parts for your equipment — the best protection you have against shut-downs!

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Located Throughout the World.

CAPACITY GOING UP...

COSTS COMING DOWN...

WITH REX ELEVATOR CHAINS and BUCKETS!

With Rex Elevator Chains, Sprockets and Buckets, you can increase elevator capacity . . . reduce operating and maintenance costs. Because there is a Rex Chain, Sprocket or Bucket that exactly fits every type of elevator service, you can select the equipment that will best stand up under the service requirements . . . add capacity through the elimination of premature failures that hold up production.

Each Rex Elevator Chain, Sprocket and Bucket is designed specifically for the conditions under which it must operate. Chain attachments are designed for the chain with which they are to run —for equal load distribution and long life. Speeds, capacities, type of material handled, daily number of operating hours are basic considerations that determine the type of chain to be used.

For help in selecting the right chain, sprocket or bucket for your elevators, consult your local Rex District Office or write direct to Chain Belt Company, 1604 West Bruce Street, Milwaukee 4, Wis.

REX LEY BUSHED CHAINS
For moderate loads and speeds, exceptionally severe abrasive service

REX DUROBAR COMBINATION CHAINS
For general, moderate load, slow speed service

REX CHABELCO CONVEYOR CHAINS
For heavy loads, high speeds, severe abrasive conditions

REX CHABELCO DRIVE CHAINS
For efficient, low-cost power transmission

REX STYLE "A" BUCKET
For General Service

REX STYLE "AA" BUCKET
For heavier, more abrasive materials

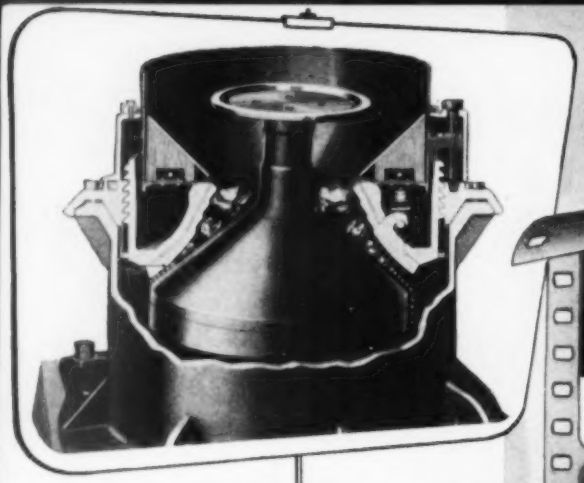
REX TEMPERIM SPROCKETS
With hardened teeth and rims for long service under abrasive operating conditions.

CHAIN BELT REX COMPANY

DRIVE AND CONVEYOR CHAINS

FIRST FOR LASTING SERVICE

now available from stock



"The SYMONS PROCESS of CRUSHING"

as revealed by the camera

'Tis said that "the proof of the pudding is in the eating." The proof in a Crusher, however, is in its ability to continually produce large quantities of desired product economically. That such has been proven by the SYMONS CONE CRUSHER is evidenced by the thousands of Standard and Short Head SYMONS CONES which have been installed throughout the world wherever fine reduction crushing is being done.

The enormous capacity of the SYMONS CONE CRUSHER is made possible by the remarkably simple SYMONS PROCESS OF CRUSHING which is revealed in the accompanying views through the camera's eye. To record the film, a Standard type CONE CRUSHER was sectionalized to expose the crushing cavity.

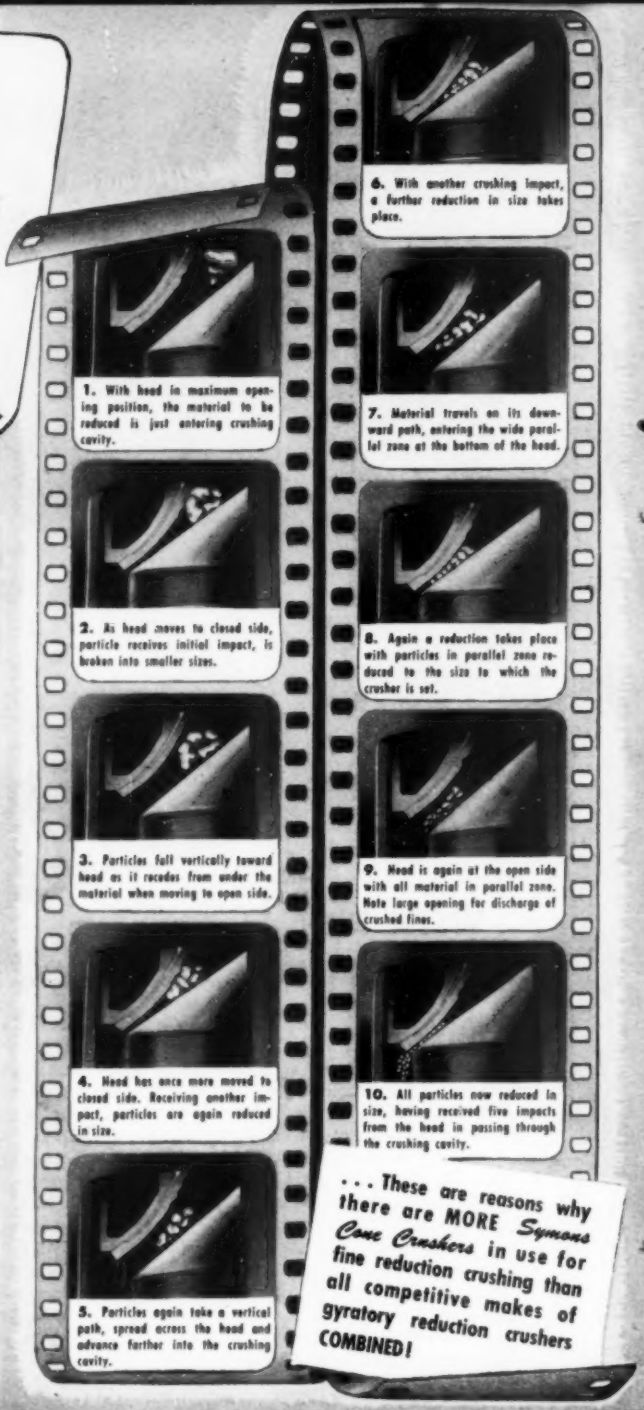
Although the SYMONS CONE is classified as of the "gyratory" type, the principle of crushing differs radically from that of the conventional gyratory since the head or cone in the SYMONS CRUSHER travels at least five times as far and gyrates much faster than in the ordinary gyratory type of crusher.

The material, in its passage through the crushing cavity in the SYMONS CONE, is controlled and timed to receive a series of rapid hammer-like blows before it is discharged.

The crushing action in the SYMONS CONE is a combination of controlled feed, high speed, timing, and extraordinarily large discharge capacity. These factors, coupled with the spring release safety feature of being able to pass uncrushable items—such as tramp iron, etc.—constitute ample proof of the superiority of the SYMONS CONE and the SYMONS PROCESS OF CRUSHING.

The camera reveals that from the time the material enters the crushing cavity until it is discharged, it passes through a successive series of crushing stages with a minimum of abrasion, sliding, or frictional wear—the entire process being one of smashing impact, resulting in maximum reduction.

C151


1. With head in maximum opening position, the material to be reduced is just entering crushing cavity.
2. As head moves to closed side, particle receives initial impact, is broken into smaller sizes.
3. Particles fall vertically toward head as it recedes from under the material when moving to open side.
4. Head has once more moved to closed side. Receiving another impact, particles are again reduced in size.
5. Particles again take a vertical path, spread across the head and advance further into the crushing cavity.
6. With another crushing impact, a further reduction in size takes place.
7. Material travels on its downward path, entering the wide parallel zone at the bottom of the head.
8. Again a reduction takes place with particles in parallel zone reduced to the size to which the crusher is set.
9. Head is again at the open side with all material in parallel zone. Note large opening for discharge of crushed fines.
10. All particles now reduced in size, having received five impacts from the head in passing through the crushing cavity.

NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN

NEW YORK • SAN FRANCISCO • WASHINGTON • SPOKANE
MEXICO, D. F. • LONDON • TORONTO • JOHANNESBURG

. . . These are reasons why there are MORE *Symons Cone Crushers* in use for fine reduction crushing than all competitive makes of gyratory reduction crushers COMBINED!

NORDBERG

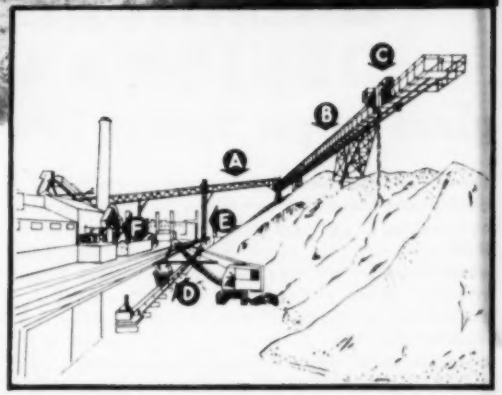
Machinery for processing ores and industrial minerals

Another Example of Continental's Belt Conveyors at Work -

The Southern Cement Company's conveying and elevating system in their Birmingham Plant incorporates several advanced features of design—one of which is illustrated above and to the right.

Continental's engineers are skilled in "practical engineering" — the kind that results in installations designed for economical, dependable operation and long life. All Continental products — whether especially designed systems and equipment or standard equipment and accessories — show the value of practical engineering.

• *Call Continental engineers in on your job — or specify Continental on your next replacement order.*



Slag is carried to storage by Conveyors A and B and discharged to storage at any point by self-propelled Tripper, C. As material is needed for processing, it is loaded by shovel onto Reclaim Conveyor D, raised by Bucket Elevator E, and discharged onto return side of Conveyor Belt A., which delivers it to Plant F.

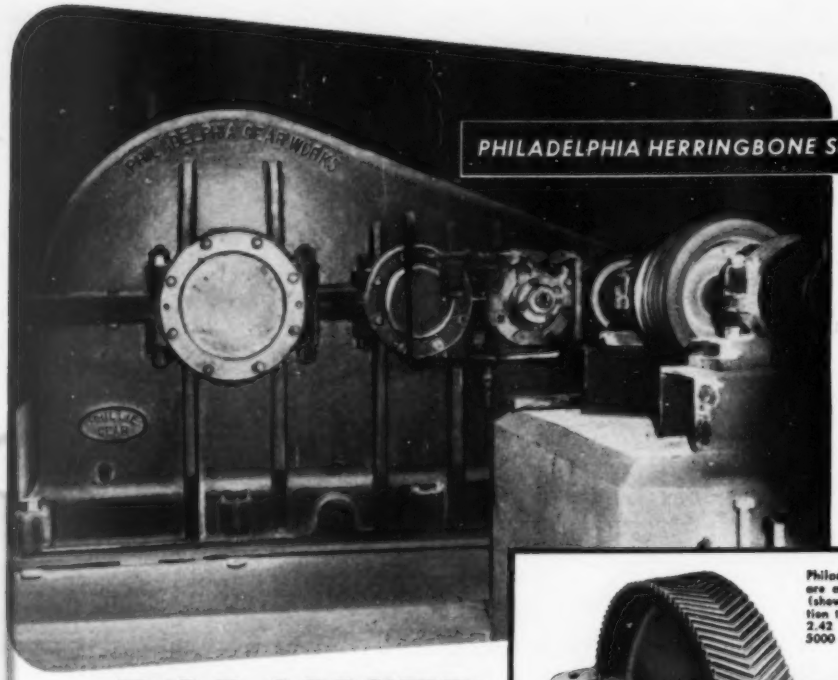
Write for your copy of Continental's new Catalog ID 481, "Continental Belt Conveyors."

CG5515

INDUSTRIAL DIVISION
CONTINENTAL GIN COMPANY
BIRMINGHAM, ALABAMA

ENGINEERS CGC ATLANTA • DALLAS • MEMPHIS • NEW YORK CGC MANUFACTURERS

PHILADELPHIA HERRINGBONE SPEED REDUCERS



A Philadelphia triple reduction herringbone reducer at a Pennsylvania lime and stone company. Reduction ratio 48 to 1.

BALANCED DESIGN ➡ ➡
gives longer Service Life

The symmetrical gear arrangement of Philadelphia Herringbone Speed Reducers allows the bearing load to be equalized . . . an important factor in the longevity of these units. The two standard bearings on each shaft absorb an equal share of the gear load. In the Double and Triple types, double helical gears are spaced equidistant from the bearings in the first and intermediate reductions. A continuous tooth herringbone gear set on the centerline for final reduction completes the perfect balance that results in quiet, smooth, efficient operation.

Philadelphia Herringbone Units are available in Single, Double (shown here) and Triple Reduction types with a ratio range of 2.42 to 292 and from 0.2 to 5000 horsepower.

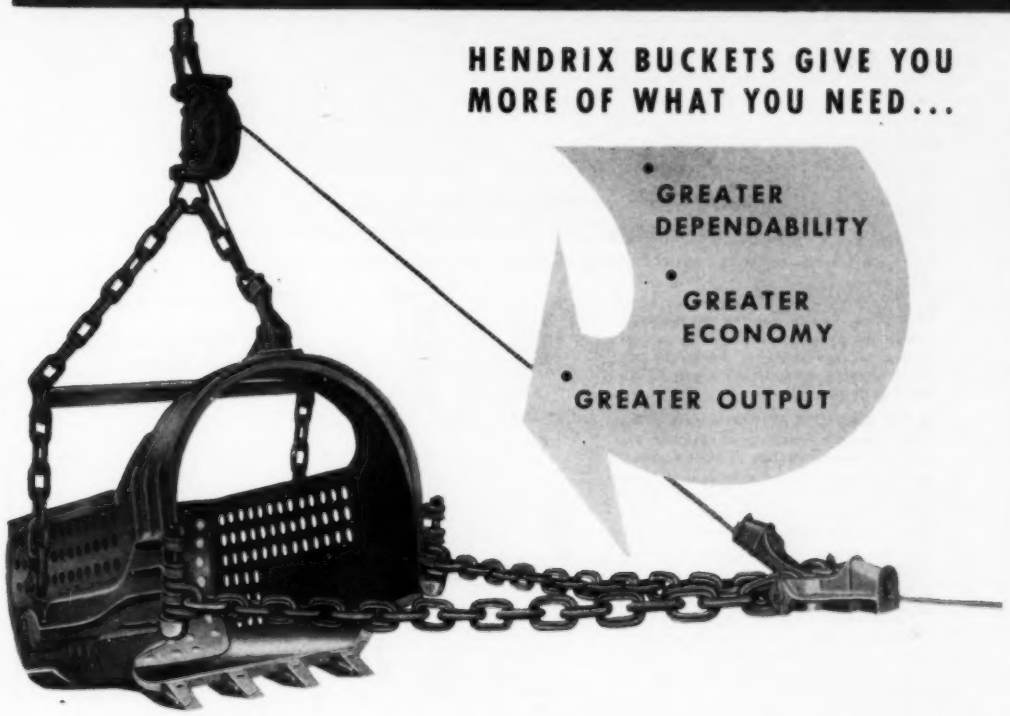
For complete construction details get our catalog H-49. Please write on your Business Letterhead.

Philadelphia Gear Works, INC.

ERIE AVE. AND G ST., PHILADELPHIA 34, PA.
NEW YORK • PITTSBURGH • CHICAGO • HOUSTON
IN CANADA: WILLIAM AND J. G. GREEY LIMITED, TORONTO

Industrial Gears and Speed Reducers
LimiTorque Valve Controls

Precisely built for bigger PROFITS



HENDRIX BUCKETS GIVE YOU MORE OF WHAT YOU NEED...

- GREATER DEPENDABILITY
- GREATER ECONOMY
- GREATER OUTPUT

3 TYPES

FOR

EVERY DIGGING PURPOSE

¾ to 40 Cu. Yds.

HENDRIX *Lightweight* **DRAGLINE BUCKETS**

Operators in the field report they get more work done in less time at lower cost with HENDRIX DRAGLINE BUCKETS. The combination of the best materials and planned engineering by men with "know-how" results in a rugged, efficient-working dragline bucket that offers the operator greater dependability on the job, greater economy in maintenance and greater output for larger profits. Ask the man who operates one... he'll tell you!

For descriptive literature ask your dealer or write

HENDRIX MANUFACTURING CO., INC.

MANSFIELD — LOUISIANA

One of a Series

from Western Precipitation Corporation — pioneers of the commercial application of COTTRELL *and now selling* COTTRELL *recovery equipment in all parts of the U.S.A. and foreign countries.*

Important points to know about COTTRELL *Electrical Precipitators*

A COTTRELL Electrical Precipitator is a major plant investment. Once installed it is operated over a period of many years, *thus multiplying year after year the benefits of top notch design and installation.*

And because of the many factors affecting the operating and collecting efficiency of a COTTRELL Precipitator, probably in no other field do the experience and "know-how" of the organization designing and installing the unit play a more important role in influencing the overall performance of the installation. That is why it is so important to remember this fact . . .

Western Precipitation Corporation is the organization that installed the first successful* COTTRELL *Precipitator over 39 years ago, still operating efficiently . . . and has consistently developed new refinements, new techniques, new applications that today have made it world famous in the science of recovering dusts, fly ash, mists, fogs and other suspensions from gases.

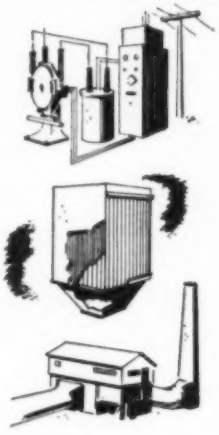
This is the first of a series of advertisements briefly outlining the important elements that go to make up a COTTRELL installation. Only long experience coupled with highest engineering ability, can assure the proper combination of these elements into a COTTRELL installation best suited to *your particular requirements*!

Basically, a Cottrell Precipitator consists of three major divisions each in turn consisting of many separate elements . . .

1. THE ENERGIZING SYSTEM, as its name implies, is the portion of the unit wherein the power is brought in, the voltage stepped up, then rectified to provide the unidirectional high voltage current supply for the Electrode System.

2. THE ELECTRODE SYSTEM consists of the high-tension ionizing electrodes and collecting electrodes through which the suspension-laden gas is passed to be cleaned. These electrodes can be of various designs, shapes and patterns and are equipped with various "rapper" arrangements which assist in keeping the electrodes clean of recovered materials.

3. THE HOUSING OR SHELL includes the structure containing the Electrode and Energizing Systems as well as the gas ducts and distributing system, the hoppers for receiving the collected material and other miscellaneous equipment.



Each of these three major divisions, together with their many individual parts, must be carefully engineered into ONE integrated and precisely-balanced unit to provide the successful and continuously-operating COTTRELL Precipitator. This series will take these major units apart to show in greater detail how the individual parts function and the varying types of design and construction. Watch for them.

10 COTTRELL ADVANTAGES

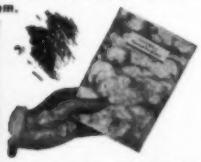
that make Cottrells unsurpassed for all types of recovery problems, hot or cold, wet or dry

1. **LOWEST DRAFT LOSS** — only a few tenths of an inch w. g.
2. **LOWEST POWER COST** — only ½ to 1 kwh. per 100,000 cu. ft. of gas cleaned.
3. **LOWEST MAINTENANCE COST** — all metal, few moving parts, no fire hazard.
4. **LOWEST LABOR COST** — operation can be fully automatic, if desired.
5. **LONGEST LIFE** — early Cottrell installation still operating after 39 years of continuous service.
6. **HIGHEST EFFICIENCY** — recovery efficiently approaches 100%, is desired.
7. **UNIVERSAL APPLICABILITY** — recover any suspension, solid or liquid — in any gas — over wide temperature ranges.
8. **ANY CAPACITY** — handle a few c.f.m. — or millions — with equal ease.
9. **MAXIMUM FLEXIBILITY** — readily adaptable to varying installation requirements.
10. **LOWEST OVERALL COST** — cost less per year of service, less per ton recovered. Often pay for themselves in a few months — always within a few years.

WESTERN Precipitation CORPORATION

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Main Offices: 1015 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA
CHRYSLER BLDG., NEW YORK 17 • 1 LaSALLE ST. BLDG., 1 N. La SALLE ST., CHICAGO 2 • HOBART BUILDING, SAN FRANCISCO 4, CALIFORNIA
PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL



Do You Have This Helpful COTTRELL Booklet? In 32 pages of interesting charts, illustrations and descriptive data, it answers many of the questions engineers ask about COTTRELL design and construction. Send for your free copy. Ask for Bulletin C163!

A 109-hole blast without mats!

. . . A **ROCKMASTER "16"** blast, of course

This was tough blasting, all right! Smack in the middle of Bend, Oregon and hemmed in by homes, a fire house, a gas station, and the main building of the hospital to which J. H. Wise & Son, Inc. was building an addition.

In Bend, every small excavation must be blasted out of lava rock—and even small blasts under protective mats have often meant broken windows and a flood of complaints. So, "You'll break every window in town" was the natural reaction to the plan of the sub-contractor, Morrison-Knudson Co., to fire a 109-hole blast.

At the suggestion of the Atlas Sales Representative, the 109 holes were drilled on 4-foot centers, employing a ROCKMASTER "16" pattern using up to the tenth milli-second delay detonator interval. The shot was fired without mats, but not a single window was even rattled.

Local contractors were amazed not only by the lack of noise and vibration and the exceptional control over throw, but by the excellent fragmentation. Perhaps the best testimonial to ROCKMASTER "16" came from a fireman on duty across the street who said he was upstairs at the time and didn't realize the blast had been fired.

This is typical of the results blasters are getting with the ROCKMASTER "16" Blasting System in construction, stripping, mining, and quarrying . . . on the surface and underground. Perhaps, this milli-second delay blasting *system* is the answer to *your* blasting problems. So send for your copy of the ROCKMASTER "16" booklet—it's *free.*

ROCKMASTER: Reg. U.S. Pat. Off.

ATLAS EXPLOSIVES *"Everything for Blasting"*

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

Jones

Herringbone SPEED REDUCERS—

. . . are built in single, double and triple reduction types. Symmetrical gear arrangement provides balanced loads on liberally proportioned bearings. Housings are substantially constructed, well ribbed and have generous pads for foot bolts.

The method of selecting these reducers with complete horsepower and dimension tables is shown in Catalog 70.

Since 1890 Jones In The Service Of Industry

W. A. JONES FOUNDRY & MACHINE CO.
4441 W. Roosevelt Rd., Chicago 24, Ill.

Herringbone — Worm — Spur — Gear Speed Reducers
Cast Iron Pulleys • Cut Gears • V-Belt Sheaves
Anti-Friction Pillow Blocks • Flexible Couplings

WELLMAN *Williams Type*

FAST BUCKET OPENING SPEEDS OPERATIONS

• Double-hinge construction on Wellman's multiple-rope bucket permits faster opening than a single hinge. This speeds up operations, also gives a bigger spread in the open bucket for the same headroom.

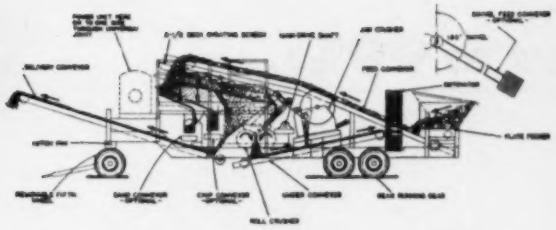
Wellman's welded-design buckets offer you better performance and longer service. In all types and sizes you'll do better with Wellman!

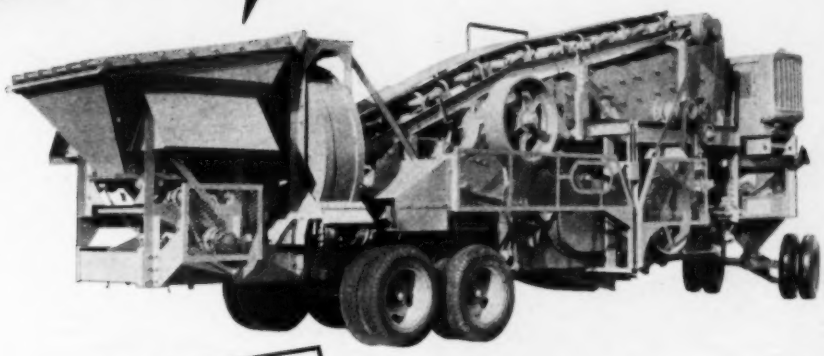
Want Facts?
Write for free descriptive bulletins.

CLAMSHELL • DRAGLINE
CUSTOM-BUILT BUCKETS
STONE AND WOOD GRABS

THE WELLMAN ENGINEERING COMPANY
7014 Central Avenue
Cleveland 4, Ohio

Follow this Flow of Material to PROFIT





880 JUNIOR GRAVELMASTER CONDENSED SPECIFICATIONS

- 1024 or 1036 Roller Bearing Jaw Crusher.
- 2416 Roller Bearing Star Gear Drive Roll Crusher.
- 3' x 10' Roller Bearing 2½-Deck Inclined Gyrating Screen.
- 6'-2" x 19' Rotovator.
- 24" Wide Conveyors. Sealed-for-life bearings.
- Plant Mounted Power or Side Drive through Universal joint.
- Countershaft for Main Drive permits choice of 1000 to 1600 RPM plant-mounted power units.
- Maximum use of V-Belt drives.
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- Chip removal standard. Conveyor optional.
- Overall height—12'-6".
- Passes state weight limitations.
- CAPACITY—60—90 yards per hour—1" based on 25% crushing with 1024 jaw crusher. For more than 25% crush, the 1036 is recommended.

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WITH UNIVERSAL "STREAM-FLO" ENGINEERING

UNIVERSAL'S "Scalping Deck" method of screening assures more effective screening, faster material flow. The heavy top "scalping deck" protects the finish deck from materials too large for the rolls and permits the lower screening area to be fully utilized. The screen is mounted at an incline giving faster separation at higher capacity, better gradation for meeting the most exacting specifications. No screenable material is carried over to choke the crushers. Material too large for the rolls is scalped to the jaw crusher. Only sized material goes to the rolls. This means greater capacity, less jaw and roll wear, lower horsepower requirements.

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This experience enables us to guarantee any efficiency up to 99% depending on your individual requirements.

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RC 120

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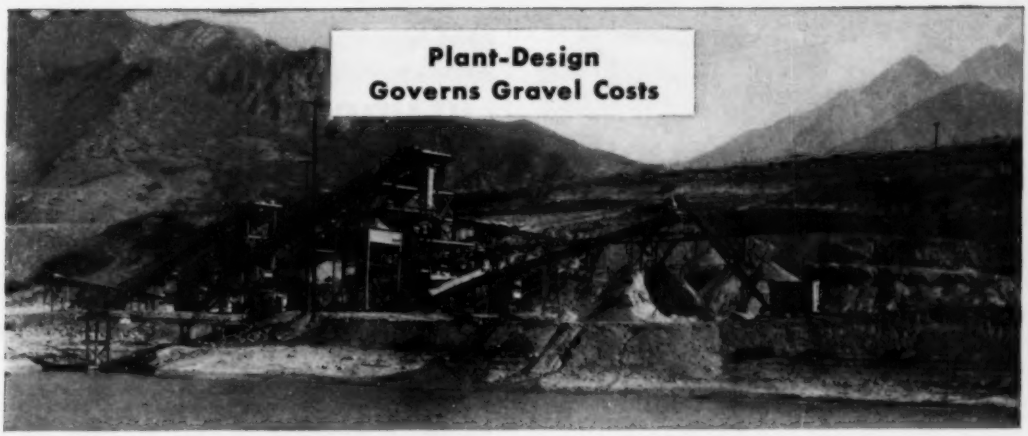

In this S-A engineered system S-A Belt Conveyors were designed for the job of handling bulk materials at lowest cost per ton. Processing costs reached new lows. This installation has a capacity of 300 tons of minus 10" gravel per hour —or equivalent volume of other materials. S-A engineers are able to draw on fifty years experience in designing such installations for fast, economical handling of rock products for all types of plants—large or small. *Write today!*

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S-A belt conveyor equipment, screens and feeders are important elements in this plant's design. In addition to four sizes of gravel—two sizes of sand and 2½" road base material, are produced. S-A conveying and screening equipment is designed and built to give maximum life and service on this and similar installations.

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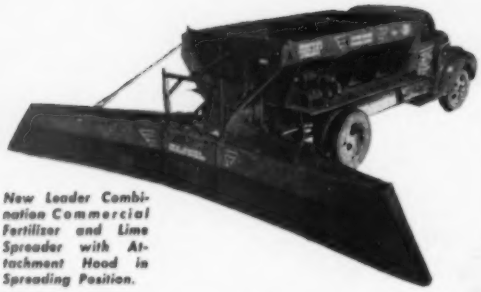

New Leader Combination Commercial Fertilizer and Lime Spreader with Attachment Hood in Spreading Position.

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COMMERCIAL FERTILIZER AND LIME SPREADER

Get complete description and profit-making facts about the spreader that's guaranteed to spread any commercial fertilizer accurately and uniformly. Also handles crushed rock, chips and gravel. Reinforced welded steel frame; steel or wooden hopper. Simplified worm gear drive from truck power take-off; dust proof, oil-tight gear box. (Optional: conveyor may be separately driven from truck drive shaft to deliver correct number of pounds per acre—regardless of truck speed or gear used.) Accuracy of spread can be controlled to as little as 150 lbs. per acre. Mounts on any standard truck chassis. Sizes: 9', 11' 13' and 15'.

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FOR HEAVY CONVEYOR BELTS OF CHANGING LENGTH

These heavy-duty belt fasteners make a strong, flexible joint in conveyor belts, belts of any width and of from 3/16" to 1/2" thickness. They offer special advantages in mines, quarries or industrial setups where length of position of belt is frequently changed, because sections can be removed or added at will. Joints are opened for this purpose by simply pulling out the hinge pin.

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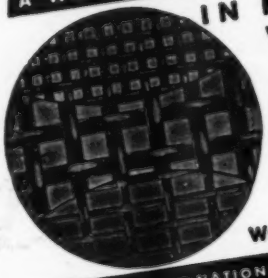

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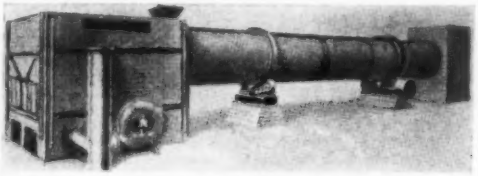

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The distinctive feature of an N & F Bin is the diagonal-ended Super-Concrete Stave formed under 140 tons pressure. It has rocklike density and crushing strength.

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with wear-resisting semi-steel or manganese parts

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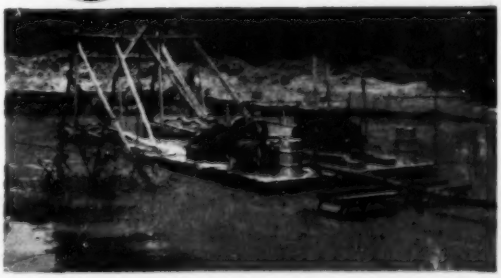
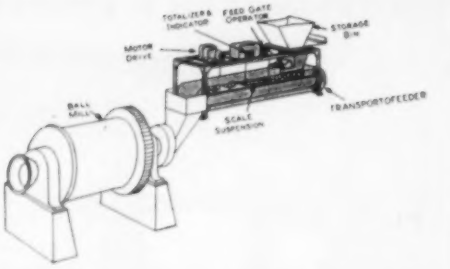
H&B

Illustration shows an H & B pump installation in a typical small pit operation.





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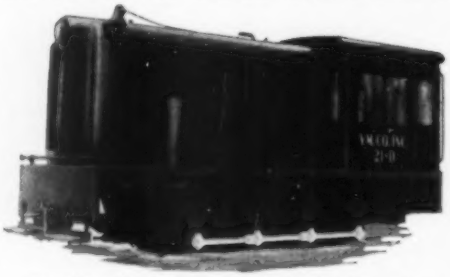
BLAW-KNOX CLAMSHELL BUCKETS
THE MOST COMPLETE RANGE OF SIZES AND TYPES

WE BUILD to Meet YOUR NEEDS



This 0-8-0, 27-Ton Davenport Diesel Mechanical Locomotive was equipped with eight drivers in order to spread the weight as a protection for light or weak track.

DAVENPORT LOCOMOTIVES are available in STEAM FIRELESS GASOLINE DIESEL with ELECTRIC HYDRAULIC or MECHANICAL DRIVE

Whatever your particular rail haulage problem and operating conditions, we can build a Davenport Locomotive to FIT your particular needs—a sure way to insure lowest ton-mile haulage costs.

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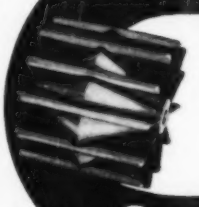
increases belt life up to 400%*



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LITTLE GIANT CRANES

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The LITTLE GIANT "Swamp Special" is ideal for use in salt marshes, Peat bogs, Tundra conditions experienced in Canada and Alaska, for reclaiming Everglades lands in Florida. There is no equal to this machine—it crosses salt marsh ditches 4' wide and 3' deep with ease.

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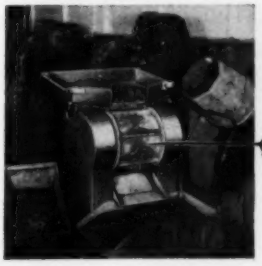

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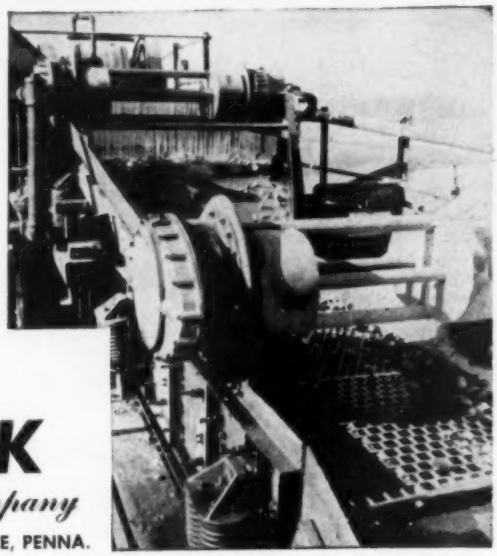

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A-1 steel and concrete designer who is also capable of designing and laying out of material handling equipment. In first letter state age, education, experience, references, and salary expected. All answers will be held confidential.

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3000 CFM Ing. Rand compressors new '42
10 Koppel 5 yd. Quarry cars 56½" ga.
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Will consider trade on For Sale items toward 75 H.P. Motor.

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CLAM SHELL BUCKET: Blaw Knox, 2 yd. capacity, NEW condition.

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CRUSHERS, SPECIAL: 1—Allis Chalmers Superior 30" and one 7½ K. Gyratory. 1—Farrel 18 x 36" Jaw.

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16 Euclids—43 f.d.t.'s. Bottom dump with built-up sides to 15 yd. struck. 19 yd. heat. G.M. Diesel. A-1 condition.
1 Euclid loader. Cummins Diesel.
5 End-dump Euclids. 28 F.D.'s. Cummins Diesel. Completely rebuilt by Cummins. Overhauled and painted.

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Gravel crushing plant with 2 sets of jaws.
1 shovel 1½ to 3 yd.
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Width	Ply	Top-Bottom	Covers
18"	4	1/8"	1/32"
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20"	5	1/8"	1/32"
24"	4	1/8"	1/32"
24"	5	1/8"	1/32"
26"	5	1/8"	1/32"
30"	5	1/8"	1/16"
30"	6	1/8"	1/16"

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Four Super C Tournapulls—Euclid Trucks—Locomotives—Dump cars—Cranes. 6—Bot Dump Euclids. Rotary Kilns—Dryers—10' x 90'—10' x 176' others. 250 KVA—440 volt—G. E. Diesel Generator Set—Like new.
36" x 48" Allis Chalmers Jaw Crusher.
48" Gyrosphere Crusher — Gyratory Crushers — Roll Crushers—Cone Crushers—Jaw Crushers—60" x 42"—25" x 40" R. B.—24" x 36"—20" x 36"—18" x 36"—15" x 36"—10" x 36".
Complete crushing plant including 42" x 36" Jaw—others.
Rod Mills—Ball Mills—Feeders—Classifiers—Tuggers—Mine Hoists—Motors—Transformers—Conveyors—Portable Gravel Plants—Blast Hole Drills. 5040 Dixie Mogul Hammer Mill—D-13000 Caterpillar Engine.

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1—B & W coal pulverizer
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Electric motors AC
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Worthington 210 cubic foot, two-stage air-cooled, on skid base with Hercules diesel.

Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven. 50 HP slip ring motor.

Worthington two-stage, water cooled, vertical 250#. 60 CFM, new condition.

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New 18" — 24" — 30" — 36"

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Worthington 15 x 9½ x 12—650 CFM—Complete with 125 HP—2/60/440 Synchronous Motor & Controls.
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10 to 20 tons per hour capacity..... $ 479.00
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Heavy duty eccentric shaft types. 1 to 5 decks; screen sizes to 5x14. Priced from $1573.00 including cloth or plate.

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Others to 50 ton capacity. All scales complete with structural steel weighbridge. Parts and weighing beams for most makes of motor truck scales.

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All steel. Interchangeable with other well-known makes. Replaceable precision ball bearings. No bearing adjustments required. Easy to start and will run in cold weather. Rust-proof ball races; maintenance is negligible.

3-roll troughing idlers for 14", 16", 18", 24", 30", 36", and 42" belt widths. Priced from $22.00. 1-roll return idlers for 14" to 48" belt widths. Priced from $8.50.

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TOUGH COVERS—Heavy duty, specially compounded abrasive resistant rubber covers having high tensile strength. Thoroughly capable of withstanding the abrasive action of bulk materials. Properly vulcanized to the carcass to assure utmost performance, economically.

STRONG CARCASS — Constructed of finest quality 28 and 32 ounce tough cotton duck, properly treated and impregnated to avoid mildew from moisture and atmospheric conditions. Each ply thoroughly embedded in rubber to prevent ply separation.

FLEXIBILITY — Careful attention has been given in the construction of all belts to have the proper flexibility assuring the following desirable features; troughs easily, runs true on all idlers, gouge resistant, excellent for long and short hauls and slope installations.

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We carry in stock for your immediate requirements, Conveyor Belting in widths from 8 inches to 48 inches.

Width	Ply	Thickness Top Cover	Thickness Bottom Cover	Type of Duck Carcass
8"	4	1/16"	1/32"	28 Oz.
10"	4	1/16"	1/32"	28 Oz.
12"	4	1/16"	1/32"	28 Oz.
14"	4	1/16"	1/32"	28 Oz.
16"	4	1/8"	1/32"	28 Oz.
18"	4	1/8"	1/32"	28 Oz.
20"	4	1/8"	1/32"	28 Oz.
20"	5	1/8"	1/32"	28 Oz.
24"	4	1/8"	1/32"	28 Oz.
24"	5	1/8"	1/32"	28 Oz.
26"	5	1/8"	1/32"	28 Oz.
30"	4	1/8"	1/16"	32 Oz.
30"	5	1/8"	1/16"	32 Oz.
30"	6	1/8"	1/16"	32 Oz.
36"	6	1/8"	1/16"	32 Oz.
42"	5	1/8"	1/16"	32 Oz.
48"	8	1/8"	1/16"	32 Oz.

INQUIRE FOR SIZES NOT LISTED. ELEVATOR TRANSMISSION & V-BELTING ALSO IN STOCK

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Speeder LS-60 shovel	Unused Morris 18" gravel pump	Butler Carscoop
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All above equipment reconditioned in our newly built daylight plant.

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COMPLETE PORTABLE ROCK CRUSHING AND SCREENING PLANT

Good Operating Condition
Immediate Delivery

Principal Items in Plant

1—4¼' Symons Cone Crusher powered with an LA501 Cummins Diesel engine, 250 HP, mounted on a heavy 3-axle pneumatic tired chassis. This unit is also equipped with a 2-stage compressor with electric motor for starting.
1—36" Telsmith Cone Crusher powered with a UD-18 International Diesel engine, and equipped with a Symons 4' x 12' double deck vibrating screen powered by electric motor. This unit is also equipped with a bucket return elevator and an under-crusher conveyor, both powered by electric motors. The entire Telsmith unit is mounted on a heavy 3-axle pneumatic tired chassis.
1—3' x 6' Symons Screen, single deck, type F.
1—Caterpillar D13000 Diesel generating set, 75 KW capacity, mounted on 2-axle pneumatic-tired chassis. This unit is built over for weather protection. For use in conjunction with the generating set, there is also a 2-wheeled pneumatic-tired trailer equipped with a 7 unit switchboard for central control.
3—Portable conveyors, 30" x 52', powered with electric motors.
1—Portable conveyor, 20" x 40', powered with electric motor.
1—21 cubic yard bin.

Approximate Capacities in Gravel Pit with 60% Crushing Required: From 10" to 2", 200 tons per hour—From 10" to 1", 150 tons per hour.

Full Information on Request

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1—Raymond 3-Roll High Side Mill.
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2—Ruggles-Coles 4½' x 25', 4' x 20' Rotary Dryers.
4—Hardinge Ball Mills 8' x 22", 6' x 22", 5' x 36", 4½' x 16".
1—Traylor 5' x 10' Rod Mill.
6—Tube Mills 6' x 16', 4' x 16', 4' x 12', 3' x 10'.
2—Traylor Jaw Crushers 30" x 36", 28" x 36".
1—Williams #20 Slugger Hammer Mill.
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8—Tyler Hummer Triple Deck Screens 3' x 5'.
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8—Oliver 3' x 2' to 8' x 12' Rotary Vacuum Filters.
1—Rotex Screen 60" x 120".
1—Farrel Jaw Crusher 10" x 20".
16—Belt Conveyors 20", 30" to 400' centers.
14—Bucket Elevators 6" x 4" to 16" x 7" to 118' centers.
40—Centrifugal Pumps from 2" to 10".
3—Dorr Thickeners 40' agitators.

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CRUSHING PLANT Gravel Portable
Prefer plant with 2 sets of jaws.
EUCLIDS 5 end dump 8 bottom dump
FOR SALE Portable
CRUSHING PLANT Pioneer 54A

54 in. x 24 in. rolls, 150 H.P. engine Feeder, 30 in. 50 ft. feeding conveyor, 3 deck 4x12 ft. shaker screen, discharge conveyor. Mounted on 4 athey crawlers. Also several thousand dollars worth of new parts. This plant is practically new—used only 1 week for tests. Located northern Indiana, 50 miles from Chicago.

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Byers 83, ¾ yd. Shovel.
Byers 71, Pullshovel and crane.
1948 Insley K-12 Pullshovel, 24" crawlers, excellent.
Pullshovel attach. Northwest 104.
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Bucyrus-Erie 54B Standard Shovel.
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Telsmith crushing, screening, wash plant, 60 tph.
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Slightly Used — $7990
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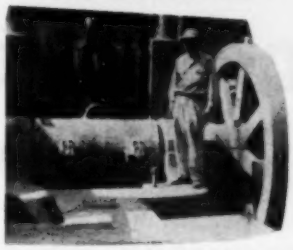

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150 HP HERCULES at 1800 DWXDS 950
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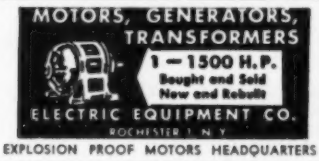

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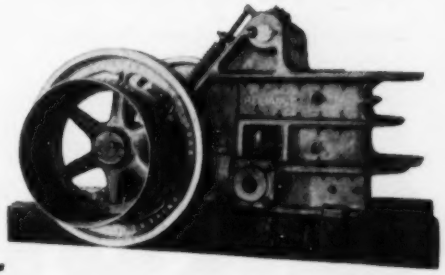

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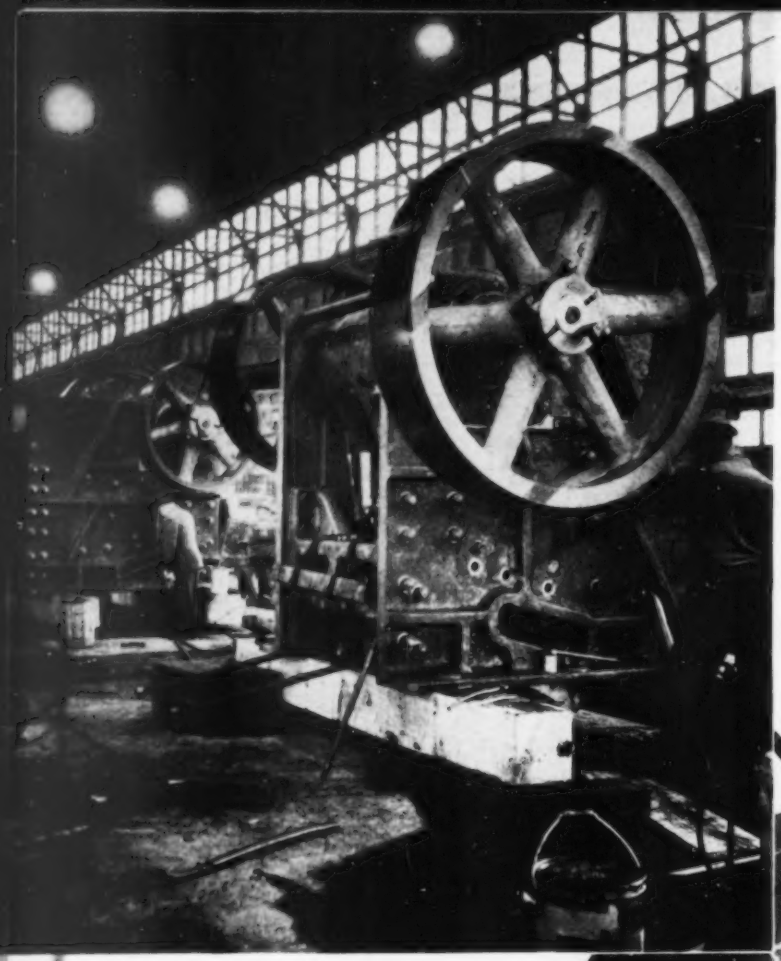

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Speedaire is Cleveland's new fan-cooled worm-gear speed reducer. Because it is fan-cooled, Speedaire will do more work—will deliver up to *double the horsepower* of standard worm units of equal frame size, at usual motor speeds. It can be installed economically on many applications where other types have been used heretofore—giving you the advantages of a compact right-angle drive. Speedaire gives the same long, trouble-free service characteristic of all Clevelands.

For full description, send for Catalog 300. The Cleveland Worm & Gear Co., 3280 E. 80th St., Cleveland 4, O.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.

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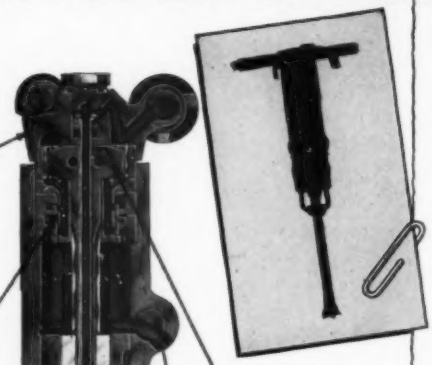

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Jet Valve is instantaneous, positive-acting, end-seating. Thrown by a jet of air, it provides precise timing. Increased piston hammer velocity results in high drilling speed, low air consumption, strong rotation and easy holding.

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